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DISEASES CAUSED BY BACTERIA AND FUNGI

HINSHAW, W. R. & MCNEIL, E. (1952). **Staphylococcosis (synovitis) in turkeys.** *Poult. Sci.* 31, 320-327. [Abst. from authors' summary.] 1

Certain strains of *Staph. pyogenes* var. *aureus* commonly produce bursitis or synovitis in turkeys. Details of the characters of the organism and of the lesions are given. In transmission experiments the disease could be reproduced only by intravenous inoculation. A penicillin resistant strain isolated from a case of mastitis in cattle produced typical synovitis in turkeys, and also involvement of the wing joints.

SELBIE, F. R. & SIMON, R. D. (1952). **Virulence to mice of *Staphylococcus pyogenes*: its measurement and its relation to certain *in vitro* properties.**—*Brit. J. exp. Path.* 33, 315-326. [Authors' summary modified.] 2

The virulence to mice of 75 strains of *Staph. pyogenes* was assessed by measuring the amount of swelling produced in the thigh after intramuscular inoculation. It was shown that the most important of the *in vitro* properties tested in determining virulence to mice is α-haemolysin production. Haemolytic activity against sheep red cells, coagulase production and fibrinolytic activity were shown to be associated with effects on virulence additive to the effect of α-haemolysin. No correlation was found between virulence and hyaluronidase production, colour, gelatin liquefaction, mannitol fermentation or resistance to penicillin.

ROUNTREE, P. M. & THOMSON, E. F. (1952). **Incidence of antibiotic-resistant staphylococci in a hospital.** — *Lancet.* 263, 262-265. [Authors' summary copied *verbatim.*] 3

Of 915 strains of *Staph. pyogenes* isolated from inpatients between Jan. 1, 1951, and Feb. 1, 1952, 592 (64·7%) were resistant to penicillin, 253 (27·6%) to streptomycin, 72 (7·9%) to aureomycin and 11 to chloramphenicol. All the strains resistant to aureomycin were likewise resistant to terramycin, and vice versa. 98% of these strains were resistant to penicillin and 66% to penicillin and streptomycin. None of these strains was acquired outside the hospital. The first strains isolated were converted to resistance during aureomycin or terramycin therapy. Subsequently the strains were isolated from cases of hospital cross-infection.

A survey of the nasal carrier-rates in 200 of the hospital staff showed that 54·5% were carriers of *Staph. pyogenes*. Of every 10 carriers, 8 were carrying penicillin-resistant strains. 47% were carrying penicillin-streptomycin-resistant strains, and 17 carriers of penicillin-streptomycin-aureomycin-terramycin-resistant organisms of one particular phage type were found.

There was a close correspondence between the distribution of phage-types and antibiotic resistance in the strains from the patients and the noses of the staff.

JACQUET, J., RICHOU, R., STEEG, L., GERBEAUX, P. J. & GERBEAUX, C. (1952). Sur les caractères des microcoques de la flore normale de la mamelle de la vache. [**Micrococcal flora of the cow's udder.**]—*C. R. Acad. Sci., Paris.* 234, 255-257. 4

A note on the biochemical characters of the micrococci commonly found in cows' udders.

—G. B. S. HEATH.

KOBYAKOVA, N. I. (1951). [**Treatment of mastitis with extract of sugar-beet tops.**]—*Veterinariya, Moscow.* 28, No. 8. pp. 57-58. 5

K. stated that daily injections for 4-14 days of an extract of sugar beet tops into the udders of 28 cows and goats with mastitis, led to clinical recovery in all except four.—F. A. A.

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

GROULADE, P. (1951). Essai de traitement des mammites par les aérosols. **[Treatment of mastitis using aerosols.]**—*Bull. Acad. vét. Fr.* **24,** 395-398. **6**

An account of the use of certain antibiotics together with a sulphonamide as an aerosol by intramammary injection for the cure of streptococcal mastitis.—G. P. MARSHALL.

GLYNN, L. E. & HOLBOROW, E. J. (1952). **Conversion of tissue polysaccharides to autoantigens by Group-A beta-haemolytic streptococci.**—*Lancet.* **263,** 449-451. [Authors' summary copied *verbatim.*] **7**

A vaccine prepared from group-A β-haemolytic streptococci in the presence of chondroitin sulphate gave rise to rabbit antisera precipitating with this polysaccharide. Of six rabbits immunised with such a vaccine five showed macroscopical and/or microscopical evidence of joint lesions. Control rabbits receiving either streptococci or polysaccharide alone showed no joint lesions apart from an occasional polymorph in the synovial membrane.

AUSTRIAN, R. (1952). **Observations on the transformation of pneumococcus** *in vivo.*—*Johns Hopk. Hosp. Bull.* **91,** 189-196. [Abst. from author's summary.] **8**

The author described the transformation of pneumococcal capsular polysaccharide and type-specific somatic M protein in a variety of mammalian species and discussed the relation of these observations to the possible natural occurrence of pneumococcal transformation reactions.

WEBSTER, H. D. & THORP, F., JR. (1952). **Experimental** *Vibrio fetus* **infection in goats.**—*M.S.C. Vet.* **12,** 152-156. **9**

Intravenous inoculations of *V. fetus* caused abortion or abnormalities in four of eight pregnant goats. Organisms could not be recovered from uterine material. All of four goats given an intra-uterine inoculation aborted and the organisms were recovered from all of them.

—L. M. JONES.

CARPENTER, L. E. & LARSON, N. L. (1952). **Swine dysentery: treatment with 4-nitro and 3-nitro-4-hydroxy phenyl arsonic acids and antibiotics.**—*J. Anim. Sci.* **11,** 282-291. [Authors' summary modified.] **10**

The arsenicals, 3-nitro-4-hydroxy phenyl arsonic acid and 4-nitro phenyl arsonic acids have a prophylactic and curative effect on swine dysentery when administered through the drinking water. Also both arsenicals and the antibiotics, aureomycin and penicillin, eliminate the outward symptoms of the disease when given early. No treatment used prevented the recurrence of the disease.

A combination of a water medication with 4-nitro phenyl arsonic acid and supplementation of the feed with one of the antibiotics—aureomycin, terramycin, penicillin or bacitracin—was the most effective treatment in curing and preventing the recurrence of the disease under the environmental conditions imposed, but a toxic condition resulted after about three weeks of such treatment.

I. STEFANOVA, E. P. (1947). **[The essence of immunity in anthrax. II. Vaccination with killed cultures of** *B. anthracis.***]**—*Veterinariya, Moscow.* **24,** No. 4. pp. 4-7. **11**

II. STEFANOVA, E. P. (1951). **[The essence of immunity in anthrax. IV. The significance of the sympathetic nervous system in infection and immunity.]**—*Ibid.* **28,** No. 5. pp. 36-38. [For parts I and III, see *V.B.* **20,** 274 & **21,** 3137.] **12**

I. Continuing the tests for the production of a vaccine prepared from killed *B. anthracis,* S. attempted to establish what was its most effective form and the significance of the post-vaccination reaction. Subcutaneous injections were made into rabbits, g. pigs and mice with either the vaccine, with agar added or with saponin added.

The results arrived at were that killed *B. anthracis* with saponin gave immunity, within the range of the experiments, to nearly 50% of g. pigs, after only one injecton instead of several, as had previously been necessary. Of decisive importance in obtaining immunity was the production of an inflammatory process reaction to injection, which was obtained with saponin but not otherwise.

Preparation of the vaccine, dosages and results for each species were described in detail.

II. It was stated that tests on rabbits had established that infection is dependent on the state of the sympathetic nervous system and its consequent reaction, it being the first to receive the impact of the invading organism.—F. A. A.

HAIGHT, T. H. (1952). **Anthrax meningitis: review of literature and report of two cases with autopsies [in man].**—*Amer. J. med. Sci.* **224,** 51-69. [Author's summary copied *verbatim.*] **13**

The literature relating to 95 previously reported cases of anthrax meningitis is reviewed and summarized. Two cases of leptomeningitis due to *Bacillus anthracis* are presented and their outstanding clinical and bacteriological charac-

teristics are described. In the first case the meningitis followed a cutaneous anthrax lesion; the second case must be considered as another instance of "primary anthrax meningitis".

From the data on the sensitivity of *B. anthracis* to various antibiotics, it is suggested that aureomycin and terramycin should be effective in the treatment of anthrax meningitis. The first patient in the report was treated with penicillin and the second with aureomycin. In the latter a "bacteriological cure" was almost achieved, although the patient died with severe brain damage associated with the extensive pathology incident to the disease.

LUCENTINI, L. & BOISVERT, H. (1952). Contribution à l'étude des réactions d'hémagglutination et d'hémolyse conditionnée dans la tuberculose. **[Haemagglutination and haemolysin tests in TB.]**—*Ann. Inst. Pasteur.* **82,** 55-65. 14

The haemagglutination reaction, using human erythrocytes coated with an antigen derived from purified tuberculin, is positive with the sera of 79% of cases of pulmonary TB. This reaction is both more sensitive and more specific than complement-fixation tests or the haemolysin test. For the haemolysin test, group O Rh-negative corpuscles are used. The test is put up as for haemagglutination, but g. pig serum is added. This test is less sensitive than the haemagglutination reaction, but it is more specific than complement-fixation tests. —A. MAYR-HARTING.

BALLABIO, C. B. & BONOMO, E. (1951). L'azione di corticoidi surrenali estrattivi e di sintesi (desossicorticosterone e 17-idrossi-11-deidrocorticosterone acetato) sul comportamento dell'allergia tubercolare nella cavia. **[Action of extractive and synthetic adrenocortical extracts (desoxycorticosterone and 17-hydroxy-11-dehydrocorticosterone acetate) on TB. allergy in g. pigs.]**—*Boll. Ist. sieroter. Milano.* **30,** 136-167. [Abst. from English summary.] 15

The authors studied the behaviour of allergy to tuberculin in g. pigs under administration of adrenal hormones (extractive corticosteroids, cortisone, desoxycorticosterone) and showed that extractive corticosteroids increase sensitivity to tuberculin, while desoxycorticosterone increases both reactivity and sensitivity (tuberculin threshold). Reactivity and sensitivity are decreased by cortisone which thus seems to antagonize desoxycorticosterone. The authors discussed the interpretation of the phenomenon and examined its possible interactions with the course of TB.

RATCLIFFE, H. L. (1952). **Protein intake and pulmonary tuberculosis in hamsters and guinea pigs.**—*Fed. Proc.* **11,** 424. [Only abst. given. Abst. from abst.] 16

The later stages of TB. in g. pigs and hamsters are accelerated by protein deficient diets.—JOHN SEAMER.

HAUDUROY, P. & ROSSET, W. (1952). Pouvoir pathogène de la souche de bacille tuberculeux homogène (Arloing et Courmont) pour le hamster. **[Pathogenicity to hamsters of a homogenous strain of tubercle bacilli.]**—*C. R. Acad. Sci., Paris.* **234,** 2397-2398. 17

This particular strain of tubercle bacilli has lost its virulence for the g. pig but is lethal to the hamster.—W. R. BETT.

WESSLÉN, T. (1952). **A histological study of the tuberculin reaction in animals with passively transferred hypersensitivity.** — *Acta tuberc. scand.* **26,** 175-182. [In English. Author's summary modified.] 18

The tuberculin reaction in the skin of animals passively sensitized by viable lymphocytes from tuberculous donors was histologically examined and shown to be principally the same as the reaction in tuberculous animals. W. confirmed the observation of other workers who found an early predominance of mononuclear cells to be characteristic of the tuberculin reaction.

WELLS, A. Q. & WYLIE, J. A. H. (1952). **The persistence of resistance following the disappearance of hypersensitivity in guinea-pigs after vaccination with vole bacillus and B.C.G.**—*Brit. J. exp. Path.* **33,** 405-414. [Authors' summary modified.] 19

Experiments were described in which g. pigs inoculated with B.C.G. or vole bacillus as well as uninoculated controls were challenged with virulent tubercle bacilli as soon as skin sensitivity had disappeared, and six months after skin sensitivity was lost. G. pigs inoculated with B.C.G. survive longer when challenged after skin sensitivity has developed than do uninoculated controls. This increased resistance to infection is probably waning when sensitivity is lost and has completely disappeared six months later. G. pigs inoculated with vole bacillus survive considerably longer than the B.C.G.-inoculated animals when challenged after skin sensitivity has developed. The resistance to virulent infection remains unimpaired both when sensitivity is lost and six months later. The relationship between sensitivity and immunity was discussed and the independence of the two phenomena was shown.

HART, P. D'A., LONG, D. A. & REES, R. J. W. (1952). **Depression of tuberculin sensitivity in guinea-pigs by certain antituberculous surface-active agents.**—*Brit. med. J.* March 29th, 680-682. [Authors' summary modified.] **20**

The development of experimental TB. in g. pigs is markedly inhibited by injection of certain surface-active polyoxyethylene ethers. The chemotherapeutically active representatives of the series diminish tuberculin sensitivity, whereas the inactive members fail to do so. Their mode of action differs from that of cortisone, since it is independent of dietary factors and of thyroid activity. Neither D2a, a chemotherapeutically active detergent, nor cortisone, in heavy continual dosage, depressed skin sensitivity to diphtheria toxin, or antitoxin levels, in g. pigs immunized with diphtheria toxoid (in this experiment the animals were sensitized with dead tubercle bacilli). Both drugs depressed tuberculin sensitivity.

The mode of action of these surface-active agents was discussed.

LENNOX, B., DEMPSTER, W. J. & BOAG, J. W. (1952). **Suppression of the tuberculin reaction in rabbits by total body irradiation with X rays.**—*Brit. J. exp. Path.* **33**, 380-389. [Authors' summary copied *verbatim*.] **21**

Irradiation of a rabbit at or near the time of inoculation with tubercle bacilli delays the appearance of the positive intradermal tuberculin reaction. Irradiation of the tuberculin-sensitive rabbit temporarily renders this reaction negative or markedly weaker. Local screening does not alter this effect. The histology of the tuberculin reaction sites, and the timing of the process, suggest that the suppression is the result of overproduction of cortisone under the stimulus of irradiation.

STEENKEN, W., JR., WOLINSKY, E., PRATT, P. C. & SMITH, M. M. (1952). **Streptomycin in guinea pigs with discrete chronic tuberculous lesions.**—*Amer. Rev. Tuberc.* **66**, 194-212. [French and Spanish summaries. Authors' summary modified.] **22**

An attempt was made in two experiments to produce chronic discrete tuberculous lesions in g. pigs; first, by allowing an experimental tuberculous infection to relapse after a preliminary 90-day course of streptomycin; and second, by increasing the native resistance of the animals by vaccination with human type attenuated tubercle bacilli previous to infection with virulent micro-organisms. Streptomycin was then administered to the animals with these chronic lesions for a period of 300 days.

Particular attention was devoted to the questions of whether the chronic necrotic lesions would respond as well as the early acute lesions in g. pigs; and whether streptomycin-resistant strains of tubercle bacilli could be recovered from such lesions after prolonged therapy.

Many of the necrotic lesions healed, leaving only residual scars. In certain animals, however, large cyst-like abscesses filled with purulent material containing many viable tubercle bacilli were seen in the lungs, liver, and spleen. These occurred mainly in g. pigs which had the most advanced necrotic lesions before treatment was started, in the group vaccinated one year previous to infection. Thus, it was found that chronic necrotic tuberculous lesions in the g. pig responded to streptomycin treatment less favourably than did the acute type of disease.

Attempts were made to recover tubercle bacilli from 15 treated g. pigs. A total of nine cultures of *M. tuberculosis* was obtained from seven of these animals. None of the 9 strains exhibited an appreciable degree of streptomycin resistance.

NÈGRE, L. (1951). Traitement d'animaux tuberculeux par quelques injections répétées, au début de leur infection, de fortes doses soit d'antigène méthylique soit de BCG sous la protection de la streptomycine. [**Treatment of TB. in animals with methyl antigen or B.C.G. with streptomycin.**]—*Bull. Acad. nat. Med., Paris.* **135**, 64-65. **23**

In g. pigs and rabbits early treatment with methyl antigen of tubercle bacilli plus streptomycin after infection gives good results; a combination of B.C.G. and streptomycin does not.

—W. R. BETT.

SMITH, D. T. & BACOS, J. M. (1952). **Effect of ACTH, streptomycin, ACTH and streptomycin on experimental bovine tuberculosis in the rabbit.**—*Fed. Proc.* **11**, 481-482. [Only abst. given. Abst. from abst.] **24**

The following results were obtained with four groups of ten infected rabbits:—All those untreated were diseased and three died within 90 days; of those treated with A.C.T.H., nine were diseased and the other died from an unknown cause; of those treated with dihydrostreptomycin, six remained well and four were moderately diseased; of those treated with A.C.T.H. plus streptomycin, eight remained well and two contracted slight disease.

—N. DEAN.

FRIEDMAN, B., SALE, L., JR. & GOLDMAN, A. (1952). **The effect of para-aminosalicylic acid (PAS) on the development of resistance of**

tubercle bacilli to streptomycin.—*Amer. J. med. Sci.* **224,** 52-56. [Authors' summary modified.] 25

The addition of P.A.S. to streptomycin or dihydrostreptomycin markedly delays the emergence of resistant organisms. Combined therapy for a period of three months results in decrease in resistant organisms during this interval and for three months thereafter. The addition of P.A.S. to streptomycin or dihydrostreptomycin increases the proportion of cases in which tubercle bacilli cease to be present in sputum both during the treatment period and the subsequent three months.

HIRSCH, J. G. & DUBOS, R. J. (1952). **The effect of spermine on tubercle bacilli.**—*J. exp. Med.* **95,** 191-208. [Abst. from authors' summary.] 26

Spermine was found capable of suppressing the growth of a variety of mycobacteria *in vitro*. It was equally active against virulent, attenuated, and avirulent variants of human and bovine types of tubercle bacilli, but had little or no effect on saprophytic mycobacteria and on several non-acid-fast micro-organisms under the conditions of the test. Its inhibitory activity on the growth of tubercle bacilli was essentially independent of the size of the inoculum within the limits studied.

FINLAYSON, M. K. (1951). **The effect of egg-yolk lipids on the growth of tubercle bacilli.** —*N.Z. J. Sci. Tech.* Sect. B. **33,** 230-233. [Author's summary slightly modified.] 27

Various fractions of egg-yolk fat were tested for their ability to stimulate the growth of human type tubercle bacilli. Total lipoids, phosphatides, and glycerides stimulated growth of both virulent and avirulent strains. Fractionated methyl esters of the fatty acids of the glycerides failed to support growth.

EMMERIE, A., ENGEL, C. & KLIP, W. (1952). **The tuberculostatic action *in vitro* of the unsaponifiable fraction of cod-liver oil.**—*J. Sci. Fd Agric.* **3,** 264-268. [Authors' summary modified.] 28

From the unsaponifiable matter of cod-liver oil a fraction was isolated with strong inhibitory action upon the growth of *M. tuberculosis in vitro*, using the fluid medium of Sauton with and without addition of serum albumin. The fraction was toxic to g. pigs and therefore could not be studied effectively in experimental TB. in these animals.

GLOVER, R. E. (1952). **The growth of *Mycobacterium tuberculosis* and *Mycobacterium johnei* in a modification of Dubos medium.**—*J. gen. Microbiol.* **6,** 251-260. [Author's summary modified.] 29

Rapid multiplication of *M. tuberculosis* can be obtained in Dubos medium modified by the addition of an iron salt and by the replacement of albumin fraction V by the supernatant fraction of 'liquoid' (Na polyanethol sulphonate) -treated bovine serum. Certain strains of *M. johnei* can be trained to grow in this medium enriched with a glycerol extract of *M. phlei*.

BAZZICALUPO, C., PORTELLA, A. & CONTIERI, M. (1951). **Action of propylene glycol upon experimental tuberculosis in guinea pigs.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 671-674. [Abst. from authors' conclusions.] 30

In experimentally infected g. pigs, subcutaneous treatment with propylene glycol inhibits extensive tuberculous lesions and prolongs the survival time. Its *in vivo* suppression of TB. is equal to that of other substances with *in vitro* bacteriostatic properties. The antituberculous power of propylene glycol *in vivo* is greater when the treatment begins immediately after infection.

VIRVIESCAS, F. (1949). Corynebacterium como agente del catarro vaginal contagioso de las vacas de la sabana de Bogotá. [**A *Corynebacterium* as the cause of bovine contagious vaginal catarrh in Colombia.**]—*Rev. Fac. Med. vet., Bogotá.* **18,** 150-155. 31

A *Corynebacterium* was found to be the cause of bovine chronic contagious vaginal catarrh in Bogotá. The author stated that antitoxin prepared from the organism was curative.—G. P. MARSHALL.

I. KIRKPATRICK, C. M., MOSES, H. E. & BALDINI, J. T. (1952). **The effects of several antibiotic products in feed on experimental ulcerative enteritis in quail.**—*Amer. J. vet. Res.* **13,** 99-101. 32

II. KIRKPATRICK, C. M., MOSES, H. E. & BALDINI, J. T. (1952). **Streptomycin studies in ulcerative enteritis in bobwhite quail. II. Concentrations of streptomycin in drinking water suppressing the experimental disease.** —*Ibid.* 102-104. 33

I. Streptomycin and chloromycetin in the feed provided a high degree of protection against the disease. No benefit resulted from the use of aureomycin.

II. The results reported confirmed the value of streptomycin in the control of this disease. At the lowest level used—1·75 g. of the streptomycin calcium chloride complex per gal. in the drinking water—beneficial results were obtained. Continuous treatment of 1 g. per gal. for 12

weeks from hatching in birds exposed to infection at eight weeks was effective in suppressing the disease.—D. LUKE.

USDIN, M., FERGUSON, L. C. & BIRKELAND, J. M. (1952). **Experimental arthritis in swine following multiple injections with** *Erysipelothrix rhusiopathiae*.—*Amer. J. vet. Res.* **13**, 188-190. 34

Multiple inoculation of pigs with hyaluronidase-producing *E. rhusiopathiae* resulted in an arthritic condition resembling the naturally-occurring disease. By analogy with the hyperimmunized horse the authors suggested that this may represent a hypersensitive condition rather than a typical infection.

Since all the known aerobic hyaluronidase-producing bacteria can cause an arthritic condition it may be that hyaluronidase bears a causal relationship to various rheumatic diseases of man involving the hyaluronic acid of connective tissue.—CLIVE BRIGGS.

OLSEN, A. M. & NEEDHAM, G. M. (1952). *Pasteurella multocida* **in suppurative diseases of the respiratory tract.**—*Amer. J. med. Sci.* **224**, 77-81. [Authors' summary modified.] 35

Past. multocida, which is generally considered to be an animal species of *Pasteurella*, occurs in human beings, especially in the infected secretions of the respiratory tract. Strains from human pulmonary disease—probably secondary invaders—were sensitive to low concentrations of penicillin. Nevertheless, the finding of animal *Pasteurella* in cases of human disease has a definite significance. The organism is usually the predominant pathogen when it occurs in the cultures of bronchial secretions or empyema fluid in such cases. It usually occurs in persons who have ample opportunity for contact with infected animals. It is rapidly eradicated by penicillin therapy and clinical improvement has usually been observed after such administration. As this animal organism appears to be relatively common in human infectious disease, it is desirable that further study should be made of its significance in infected material.

CORDIER, G., RIGAUD, G. & OUNAIS, A. (1952). Shigellose des équidés en Tunisie. [*Bacterium viscosum equi* **infection of foals in Tunisia.**]—*Rec. Méd. vét.* **128**, 133-154. 36

A conventional account of infection in mares and foals with *Bact. viscosum equi*. Serum and colostrum agglutination tests were valuable for diagnosis of the infection in mares. Treatment of foals at birth with streptomycin appeared to give some protection; blood transfusion, treatment with other antibiotics, or vaccination with polyvalent vaccine were of doubtful value.—A. J. STEVENS.

CZARNOWSKI, A., NOWAK, B. & BUCZOWSKI, Z. (1952). Pałeczki Salmonella gallinarum u świni. [*S. gallinarum* **infection in swine.**]—*Méd. vét., Varsovie.* **8**, 113. 37

A note on the isolation of *S. gallinarum* from a dead pig.—J. R. MITCHELL.

CARNOCHAN, F. G. & CUMMING, C. N. W. (1952). **Immunization against** *Salmonella* **infection in a breeding colony of mice.**—*J. infect. Dis.* **90**, 242-248. 38

The authors emphasize the significance of environment, and residual infection therein, in epizootics, and advocate the removal of young mice to a fresh room at weaning time. Vaccination with "typhoid combined vaccine", containing *S. typhi*, *S. paratyphi* and *S. schottmuelleri*, reduced the death rate and the extent of subsequent outbreaks, and the offspring from vaccinated breeding stock showed a great improvement in appearance and viability.—CLIVE BRIGGS.

WEIDENMÜLLER, H. (1952). Über die Paratyphusinfektion beim Goldhamster (Mesocricetus auratus). [*Salmonella* **infection in hamsters.**]—*Tierärztl. Umsch.* **7**, 49-52. 39

W. stated that salmonella infections are fatal for hamsters only after intraperitoneal or intramuscular injection. After oral infection the organisms can be found for weeks in the intestine and organs, but the animals remain well.—A. MAYR-HARTING.

SELIVANOV, A. V. (1951). [**Sheep as carriers of** *Salmonella abortus-ovis* **infection.**]—*Veterinariya, Moscow.* **28**, No. 8. pp. 37-39. 40

Tests were made on 15 apparently healthy sheep and on 20 sheep and lambs infected artificially with *S. abortus-ovis* subcutaneously or *per os*, and kept apart. The organisms were cultured from the faeces of two of the healthy sheep. None could be cultured from the artificially infected sheep during life but from ten of them, killed six days to six months later, cultures were obtained from the mesenteric lymph nodes, spleen, uterus, liver, gall-bladder and contents of the duodenum. S. concluded that sheep can be carriers of *Salmonella* but that the present methods of examining faeces for *Salmonella* are insufficiently delicate.—F. A. A.

MURA, D., ALTIERI, M. & CONTINI, A. (1952). Indagini sull'aborto ovino da Salmonella. [**Salmonella abortion in sheep.**]—*Zooprofilassi.* **7**, 210-212. [Spanish summary.] 41

Using a rapid agglutination technique, all

of 12 blood samples from rams in 11 different flocks known to be infected with *S. abortus-ovis* yielded positive reactions. The specificity of the test was checked by testing the sera with different antigens, and the antigen with sera from animals known not to have been in contact with the disease. It is not possible to say that rams transmit the disease by coitus, but they must at least be considered as carriers. The same test revealed agglutinins in the sera of 12 infected foetuses from sheep and one from a goat.

—R. G. MARES.

HEWES, W. E., JR. & STAFSETH, H. J. (1952). **Pullorum disease studies in turkeys. V. On the chemical nature of the factor responsible for zone reactions in the tube agglutination test for pullorum disease in turkeys.**—*Poult. Sci.* **31**, 632-638. 42

Antigen prepared from three strains of *Salmonella pullorum* and their homologous antisera produced in turkeys were used; one of the antisera yielded the zone phenomenon. The inhibitive factor of the zone phenomenon was found in the globulin fraction and appears to be a partial or incomplete agglutinin, which can be removed by absorption with homologous antigen. That the inhibitive factor was found to be species but not strain specific suggests that it is similar in molecular structure to the agglutinins.—F. T. W. JORDAN.

YAW, K. E. & KAKAVAS, J. C. (1952). **Studies on the effects of D-amino acids on *Brucella abortus*.**—*J. Bact.* **63**, 263-268. [Abst. from authors' summary.] 43

The growth in broth (Albimi) of two strains of *Br. abortus* which require the addition of CO_2, and of one strain not requiring addition of CO_2, was inhibited by the addition of D-amino acids at levels at which the L-forms do not produce inhibition. Of the D-amino acids tested, D-phenylalanine and D-methionine caused the greatest inhibition of growth. The inhibitory effect was general for the DL-form of all the essential amino acids, lysine being the least inhibitory.

The D-amino acids have a bactericidal effect upon *Br. abortus* as well as a bacteriostatic effect.

KING, N. B., VENZKE, W. G. & EDGINGTON, B. H. (1952). **Studies on the experimental treatment of bovine brucellosis.**—*Amer. J. vet. Res.* **13**, 152-157. [Authors' summary slightly modified.] 44

Blood plasma, sulphadiazine, streptomycin, colloidal manganese, and aureomycin, singly or in combination, were administered to 16 cattle shedding brucella organisms in their milk. The use of the therapeutic agents, singly or in combination, apparently caused a temporary cessation in the shedding of brucella organisms in most of the animals treated. Recurrent infection was noted in all but two animals in which studies were completed; however, the latter were under observation for only a 16-day period.

The use of therapeutic agents, singly or in combination, had no apparent effect on the blood agglutination titres of the animals treated.

HUTTON, R. S., HILMOE, R. J. & ROBERTS, J. L. (1951). **Some physical factors that influence the survival of *Brucella abortus* during freeze-drying.**—*J. Bact.* **61**, 309-319. [Authors' summary slightly modified.] 45

An experimental freeze-drying apparatus was constructed and used. With this apparatus it was possible to maintain close control over such factors as the temperature of the ice film before and during drying and to vary rates of drying. Bottles containing individual samples could be stoppered in the gaseous environment that existed at any time during the drying period. If desired, the interior of the apparatus and the exterior of the bottles containing the samples could be sprayed with a disinfectant before the apparatus was opened.

The existence of a critical temperature for the frozen samples, above which recovery of viable cells was lessened, was demonstrated, and this effect was associated with the salt content of the sample.

The existence of an optimum rate of drying was demonstrated. The effect of residual moisture in the samples on the viable cells recoverable from the samples was determined. Dryness was shown to be correlated with recovery immediately after drying, and storage at room temperature was shown to be influenced by the dryness of the sample. A technique for controlling moisture content at very low levels was used in these studies.

CAMERON, H. S. & MEYER, M. E. (1952). **Reversal of thionine inhibition by various substrates on *Brucella suis*.**—*Amer. J. vet. Res.* **13**, 161-163. [Abst. from authors' summary.] 46

The authors described the inhibition of a desulphydrase enzyme, apparently a component of brucella, by thionine. Glutamic acid did not counteract this inhibition either with the resting or the reproducing cell. The amino acid, on the other hand, counteracted the inhibitory effect of thionine on the growth of *Br. suis*.

CAMERON, H. S. & MEYER, M. E. (1952). **The comparative effect of related chemical groups on the growth of three species of *Brucella*.**—*Amer. J. vet. Res.* **13,** 10-12. [Authors' summary modified.] **47**

Three of the major synthetic dye groups that are structurally related were tested for their effect upon the growth of *Br. abortus, Br. suis* and *Br. melitensis*. The only consistent pattern within the group was the ability of the xanthene compounds to inhibit *Br. melitensis* at concentrations much lower than those permitting growth of *Br. suis* and *Br. abortus*. The structure *per se* of the compound was not wholly responsible for the variation in growth.

I. RENOUX, G. & CARRÈRE, L. (1952). De la valeur des caractères d'identification des *Brucella*. [**The value of the characters used in identification of *Brucella* spp.**]—*Ann. Inst. Pasteur.* **82,** 277-288. **48**

II. RENOUX, G. (1952). La classification des *Brucella*. Remarques à propos de l'identification de 2,598 souches. [**Classification of brucella organisms.**]—*Ibid.* **82,** 289-298. **49**

I. The authors stated that when typical strains of *Br. melitensis* (1), *Br. abortus* (4) and *Br. suis* (1), and 3 atypical strains of the first two species were subinoculated on Difco Bacto-tryptose-agar containing either thionine or basic fuchsine, or on Petragnani medium, the Huddleson type characteristics of the new colonies were found to differ from those of the parent strains. Neither the nature nor the distribution of these changes seemed to depend on the type of the original strain, nor were they affected by the type of dye present in the original medium. They stated furthermore, that an atypical strain of *Br. abortus* could be made to change into *Br. melitensis* upon passage through g. pigs or sheep. They concluded that the subdivision of brucella into three species is of practical value only and not based upon any scientific proof of the strict type required for the more orthodox kind of classification.

II. In the examination of 2,598 strains of *Brucella* by the Huddleson technique, as well as on Petragnani medium and by measuring urease activity and antigenic properties, Huddleson's technique allowed 95% of all strains (88·6% of those of bovine origin) to be classified into one of the three usual categories. 4·7% of 1,974 of these strains were classed as atypical (11% of those of bovine origin). Having found that the differences between the various strains of *Brucella* are only quantitative, R. proposed a tentative new classification for the whole genus, which would not, in his opinion detract in any way from the practical value of current methods of identifying freshly isolated strains, but might avoid certain pitfalls in serological diagnosis: The genus *Brucella* to comprise three species:

I. *Br. brucei* (n.sp.) which is to include four main varieties, viz.: *Br. brucei* var. *melitensis; Br. brucei* var. *abortus; Br. brucei* var. *suis* (formerly the American type of *Br. suis*), and *Br. brucei* var. *thomseni* (formerly the Danish type of *Br. suis*), as well as *Br. brucei* var. *lisbonnei*, to denote strains which grow on thionine or basic fuchsine media and liberate SH_2 for two days or more.

II. *Br. bronchiseptica* (Ferry), as defined by Bergey.

III. *Br. tularensis*, if and when properly attributed to the genus *Brucella*.

—G. P. MARSHALL.

LEÓN, A. P., CANO, C. & VERGARA, M. E. (1952). **Antibiotics and immunodesensitization in the treatment of human brucellosis.**—*Science.* **115,** 576-577. **50**

The authors advocate "immunodesensitisation" (preferably in conjuction with antibiotic therapy) in human brucellosis, *i.e.*, the administration of small, slowly absorbed, progressively increasing doses of antigen in order to desensitise and at the same time stimulate the development of immunity.—CLIVE BRIGGS.

BÁLINTFFY, S. (1951). **On the penicilline therapy of fowl spirochaetosis.**—*Acta vet. hung.* **1,** 129-135. [In English. Russian summary.] **51**

20,000 units of aqueous penicillin per kg. body weight were effective in curing laboratory cases of fowl spirochaetosis.—JOHN SEAMER.

HENRY, J. N. (1950). **Vaccination against spirochaetosis in fowls.**—*Aust. vet. J.* **26,** 301-307. **52**

A report on field trials with a formolized egg-grown vaccine envolved by L. Hart at the Veterinary Research Station, Glenfield, N.S.W. Vaccinations were carried out in flocks in which the disease was actually occurring and in others wherein mortality from spirochaetosis had taken place in previous years.

Chickens as young as four weeks old were vaccinated, but, as Hart had suggested, best results were obtained in birds aged 12 weeks or older. In flocks vaccinated during an outbreak, mortality in the birds so treated ceased within 10 days. Prophylactic vaccination of birds aged 10–12 weeks or older gave outstanding results, mortality in those vaccinated being less than 1% compared with 30–40% in the controls. Over the previous three years no breakdowns in birds vaccinated when 10–12

weeks old or older, had been known to occur, although most birds had been kept until at least 2½ years old. The opinion is expressed that the vaccine is very effective in controlling spirochaetosis.—D. A. GILL.

KUMERT, H. & SCHMIDTKE, L. (1952). Die Bedeutung der nichtstechenden Fliegen für die Verschleppung von Leptospiren. [**Non-biting flies as transmitters of *Leptospira*.**]—*Z. Tropenmed. u. Parasit.* **3**, 475 - 486. [Abst. from English abst.] 53

Imagines and larvae of *Calliphora erythrocephala, Musca domestica* and *Lucilia sericata* were infected by feeding or by rectal injection with *L. icterohaemorrhagiae, L. grippo-typhosa* and *L. canicola* in order to test their role as transmitters.

Leptospira were found up to 26 hours after infection in the crop and intestines. Larvae either died or freed themselves from infectious material before undergoing metamorphosis. The feeding of carbohydrates favoured the survival of leptospira in the intestinal tract.

It was concluded that, while larvae are unable to carry the infection, all non-blood-sucking flies can transmit leptospira by contaminating foodstuffs, faeces, water, etc.

HOSOYA, S., SOEDA, M., KOMATSU, N., OKADA, K. & WATANABE, S. (1951). **Isolation of an antibiotic with anti-leptospira activity.**—*Jap. J. exp. Med.* **21**, 411-417. [In English. Abst. from authors' summary.] 54

An antibiotic was isolated from the culture filtrate of an unidentified species of *Streptomyces,* isolated by the authors from soil and designated H-2053 strain. It was active against *L. icterohaemorrhagiae, L. autumnalis A, L. autumnalis B, L. autumnalis C* and *L. pyrogenes.*

SCHNEIDERMAN, A., GREENE, M. R., SCHIELER, L., MCCLURE, L. E. & DUNN, M. S. (1951). **Nutrition of *Leptospira canicola*. II. A chemically defined basal medium containing purified rabbit serum albumin.**—*Proc. Soc. exp. Biol., N.Y.* **78**, 777-780. [Authors' summary modified.] 55

L. canicola was cultivated satisfactorily on a chemically-defined medium supplemented with electrophoretically-homogeneous rabbit albumin separated from serum by ammonium sulphate fractionation. The results of experiments with crystalline bovine and human serum albumins, and with salt-precipitated albumin fractions from bovine, horse and sheep sera were discussed.

BERG, M. & LEVINSON, S. A. (1952). **Alkaline phosphatase activity of the kidney following experimental shock in dogs induced by *Clostridium perfringens* toxin.**—*Arch. Path.* **53**, 179-186. [Authors' summary modified.] 56

The histochemical and cytological observations in conjunction with the physiological and chemical studies of the blood and urine provide a composite picture of the cellular changes of the kidney associated with experimental shock induced by lethal doses of *Cl. welchii* toxin.

A sequence of functional and structural alterations of both the glomeruli and the tubules was observed which suggested that the effects of the toxin on the kidneys may be the result of (1) circulatory changes, (2) a direct action of the toxin or toxic products on the cells, or, (3) a combination of these factors.

The changes in cellular physiology were more readily detected with the histochemical and mitochondrial staining methods than with the haematoxylin and eosin stain.

The reduction of the alkaline phosphatase activity, the intracellular destruction, and the effect on the secretion of phenol red are probably due to the alteration of cellular activity resulting from the toxic effect of the *Cl. welchii* toxin.

WRIGHT, E. A., MORGAN, R. S. & WRIGHT, G. P. (1952). **The site of action of the toxin in local tetanus.**—*Lancet.* **263**, 316-319. [Authors' summary slightly modified.] 57

Intravenous nembutal anaesthesia [in rabbits] terminates the spasticity and exaggerated electrical activity of muscles in local tetanus. This suppressive action has been found to take place even if the circulating anaesthetic is prevented from reaching the affected muscles by the inflation of a pressure cuff on the thigh. From this latter observation it is inferred that the source of the exaggerated mechanical and electrical activity in such muscles lies within the central nervous system and not peripherally at the myoneural junctions.

I. DESLIENS, L. (1951). Traitement du tétanos du cheval par la voie carotidienne. [**Treatment of tetanus in the horse by injection of antiserum and drugs into the carotid artery.**]—*Bull. Acad. Nat. Méd.* **135**, 528-533. 58

II. DESLIENS, L. (1951). Traitement du tétanos du cheval par immunotransfusion. [**Treatment of tetanus in horses by transfusion of blood from immune animals.**]—*Ibid.* 533-536. 59

I. & II. Details of the technique of intra-carotid artery injection were given, together with

the effects of injecting certain chemicals; unilateral injection of tetanus toxin was advocated as an experimental technique. Intravenous passive immunisation with whole blood from convalescent animals was recommended for treatment.—G. FULTON ROBERTS.

HUTSCHENREITER, C. (1952). Tetanus und Epiphysan G. Richter. [**Treatment of tetanus with "epiphysan" (a preparation of cattle pineal gland).**]—*Schweiz. Arch. Tierheilk.* **94,** 214-227. [English, French and Italian summaries.] **60**

H. reported 23 case-histories of horses affected with tetanus in which an extract of pineal gland from cattle was used either alone, or in combination with tetanus antitoxin or penicillin. Ten horses recovered.—ROY MACK.

BELLINGER, H., KÖRNLEIN, M. & LEMBKE, A. (1951). Das Verhalten des Toxins von *Clostridium botulinum* und *Salmonella enteritidis* gegenüber Chemotherapeutica, Antibiotica und Farbstoffen. [**The influence of chemotherapeutic agents, antibiotics and stains on *Cl. botulinum* and *S. enteritidis* toxins.**]—*Zbl. Bakt. I.* (*Orig.*) **156,** 430-445. **61**

Patulin, streptomycin sulphate, dihydrostreptomycin sulphate, calcium penicillin, benzalacetone thiosemicarbazone, patulin thiosemicarbazone, 4-formylantipyrine thiosemicarbazone, "antistin", "ludistin" (anti-allergic agents), benzedrine sulphate and vitamin D_2 all failed to neutralize botulinus toxin in laboratory animals.

Potassium permanganate and bromine neutralized the toxin, but hydrogen peroxide, quinone and quinhydrone were ineffective.

Of numerous dyes tested, only crystal violet neutralized the toxin. When lecithin was injected either with or following the toxin, crystal violet failed to neutralize the latter except in high concentration (200 mg.%).

Crystal violet and potassium permanganate both failed to neutralize *S. enteritidis* toxin.

—F.E.W.

MAZUREK, C., BAZIN, O., BAZIN, J. & KARSENTI, G. (1952). Une nouvelle maladie mortelle du chien: la septicémie à *Inflabilis sanguicole.* [**A new fatal disease of dogs. Septicaemia caused by *Clostridium strasburgense.***]—*Ann. Inst. Pasteur.* **82,** 631-632. **62**

A note on observations of 23 cases of enterotoxaemia in dogs in South East France. The causal agent was identified as *Cl. strasburgense.*—J.D.

SELIGMANN, E. (1952). **Virulence enhancing activities of aureomycin on *Candida albicans.***—*Proc. Soc. exp. Biol., N.Y.* **79,** 481-484. [Author's summary copied *verbatim.*] **63**

Candida suspensions are non-pathogenic, and aureomycin solutions non-toxic, when either of these alone is injected intraperitoneally into mice. The mixture of both is fatal. A similar "drug-fungus" effect though less pronounced was observed when aureomycin was given from 24 hours before to 4 hours after *Candida* inoculation. Given 8 and 24 hours after infection aureomycin was ineffective. The virulence enhancing activity of aureomycin was destroyed on standing at room temperature or by boiling, a parallel to its antibiotic activity. No indication of toxin production or biological alteration of *Candida* was found *in vitro.* No direct growth stimulating effect by aureomycin on *Candida* was observed in cultures. The action *in vivo* was one of lowering the animal's resistance.

CASIDA, L. E., JR. & MCCOY, E. (1952). **Acquired resistance in *Candida albicans* to an antibiotic produced by a sporeforming bacillus.**—*J. infect. Dis.* **90,** 283-290. [Authors' summary modified.] **64**

The authors reported work on the resistance developed by *C. albicans* to a new antifungal antibiotic produced by a bacillus B-40, resembling *B. subtilis.* This resistance manifests itself as a decrease in the lag period before *C. albicans* is able to grow in the presence of the antibiotic. The lag period varies with the logarithmic function of antibiotic concentration, and the antibiotic is not destroyed during growth. Only a fraction of the cells are killed outright by the antibiotic.

Strains of *C. albicans* resistant to this antibiotic can be easily developed by subculturing from the greatest antibiotic concentration at which growth will occur or by subculturing in series from growth occurring at levels of antibiotic well below the inhibitory level. After transfer 40 times in the absence of antibiotic, a resistant culture shows a partial loss, *i.e.,* 16 times in a culture, the original resistance of which was 64 times that of the sensitive parent.

Resistance to the antibiotic is accompanied by conversion of the normal yeast phase of growth of *C. albicans* to strongly mycelial growth, both in broth culture and in giant colonies on agar. This morphological variation resembles that which occurs in dissociated strains of *C. albicans* both at random in a normal population and during serial transfer in lithium

chloride broth. Cultures dissociated by the latter procedure acquired moderate resistance to the antibiotic.

HULSE, E. C. (1952). **An outbreak of mastitis in cattle caused by yeasts and the experimental reproduction of the condition.**—*Vet. Rec.* **64,** 210-211. [Author's summary copied *verbatim.*] 65

In an outbreak of acute mastitis, in which the infected cows were being fed with brewer's grains, an unidentified "wild" yeast was isolated from the grains and secretions following the injection of udders with procaine penicillin combined with the use of penicillin cream externally. Experimental reproduction of the condition was attained by the injection of procaine penicillin artificially contaminated with a mixture of yeast culture and penicillin cream.

POUNDEN, W. D., AMBERSON, J. M. & JAEGER, R. F. (1952). **A severe mastitis problem associated with *Cryptococcus neoformans* in a large dairy herd.**—*Amer. J. vet. Res.* **13,** 121-128. [Abst. from authors' summary.] 66

An account of mastitis due to *C. neoformans* in 106 cows of a herd of 235. The origin of the infection was not determined. Fifty-five of the infected animals developed visibly abnormal conditions of their udders or milk, and the majority of these had severe attacks. Most of the clinical cases occurred during the earlier months of the outbreak, while infection without symptoms was the rule in later months.

Reasonable success followed the use of generally recommended methods for the control of mastitis, including segregation of infected animals, improved sanitation, and limited treatments coupled with care in milking machine operation and some changes in feeding practices.

A calf exposed to *C. neoformans* by oral, intravenous, and subcutaneous administration failed to develop infection.

HENZE, S. (1952). Zur Ätiologie der Rattenbisskrankheit. **[Aetiology of rat-bite fever.]** —*Z. Tropenmed. u Parasit.* **3,** 309-313. [English summary.] 67

A general note. No new information.

FLORESTANO, H. J. & BAHLER, M. E. (1952). **Antifungal properties of the polymyxins.**—*Proc. Soc. exp. Biol., N.Y.* **79,** 141-143. [Authors' summary copied *verbatim.*] 68

Polymyxins A, B, D and E were tested for antifungal activity against 5 species of dermatophytes and 1 systemic fungus. Varieties B and E were the most active and of equal effectiveness. Activity of the polymyxins was not significantly inhibited by serum.

Clinical trial of the topical and systemic efficacy of polymyxins B or E in mycotic infections is suggested.

REISS, F. & CAROLINE, L. (1950). **The effect of trimeton maleate on pathogenic fungi.**—*Exp. Med. Surg.* **8,** 330-335. [Abst. in *Rev. med. vet. Mycol.* **1,** 433. (1951), modified.] 69

The effect of the antihistamine trimeton maleate on 13 pathogenic fungi was investigated. The maximum degree of inhibition was observed in *Blastomyces dermatitidis, Cryptococcus neoformans,* and *Histoplasma capsulatum.* A slighter action was exerted on *Trichophyton gypseum* [*T. mentagrophytes*], *T. purpureum* [*T. rubrum*], *T. violaceum, T. album, Epidermophyton inguinale* [*E. floccosum*], *Microsporum audouini,* and *M. lanosum* [*M. canis*]. *Coccidioides immitis* and *Paracoccidioides brasiliensis* were scarcely affected and *Candida albicans* not at all.

REISS, F. & LUSTIG, B. (1948). **Evaluation of fungicides.** — *Dermatologica.* **97,** 312-319. [Abst. in *Rev. med. vet. Mycol.* **1,** 475. (1951), copied *verbatim.*] 70

In vitro tests of the fungicidal effect of phenol, dinitroso-cyclohexylphenol, undecylenic acid, several quaternary ammonium compounds and their mixtures and salts alone and combined with pentachlorophenol showed that the sensitivity of various species of fungi did not run parallel with the fungicidal effects of other compounds and combinations and to their phenol content. The highest fungicidal activity was shown by a mixture of cetyldimethylbenzylammonium chloride and cetyltrimethylammonium-pentachlorophenate.

EAGLE, H., FLEISCHMAN, R. & LEVY, M. (1952). **Development of increased bacterial resistance to antibiotics. I. Continuous spectrum of resistance to penicillin, chloramphenicol, and streptomycin.**—*J. Bact.* **63,** 623-638. [Authors' summary modified.] 71

In single colony cultures of *Streptococcus pyogenes* var. *aureus, Str. pyogenes* (Group A), *Str. agalactiae* (Group B), *Str. faecalis, Bact. coli,* and *Str. pneumoniae* (Type III), tested with penicillin, chloramphenicol, or streptomycin the number of organisms capable of growing out to form visible colonies decreases with the concentration of the drug. The emergent colonies and subcultures of those colonies are regularly more resistant than the parent culture, and in general, their resistance is related to the concentration at which the colony had grown

out. At low threshhold concentrations of antibiotic, 10–90% of the organisms inoculated may survive to form colonies slightly but significantly more resistant than the parent culture. At high concentrations, just below the sterilizing level, only a few organisms grow out to form highly resistant colonies. Between these two extremes there is a smooth gradation with no indication of discontinuous stepwise differences. A similar "spectrum" of resistance is observed in subcultures of the resistant colonies which grow out in the presence of antibiotic when they are retested at appropriately higher concentrations of the drug.

The mechanism whereby bacteria develop increased resistance to antibiotics, and the dual possibility of (a) spontaneous mutations which grow out selectively in the presence of the antibiotic, or (b) a drug-directed adaptive process, were discussed in the light of these observations.

LEBEAU, L. J., BOND, E., BANICKI, J. & NOVAK, M. (1952). **The *in vitro* sensitivity to terramycin of bacteria isolated from small animals.**—*Cornell Vet.* **42,** 200-206. [Authors' summary and conclusions modified.] **72**

Of 185 strains and 31 species of bacteria freshly isolated from small animals, 79% were susceptible to 10 μg. or less of terramycin by *in vitro* methods. Of the more resistant strains, 82·5% were of the genera *Proteus* and *Pseudomonas*. The incidence and significance of these organisms were discussed.

LAMBERT, H. P. & RICHLEY, J. (1952). **The action of mucin in promoting infections: the anticomplementary effect of mucin extracts and certain other substances.**—*Brit. J. exp. Path.* **33,** 327-339. [Authors' summary modified.] **73**

Tryptic mucin, an impure extract of gastric mucin, inhibits sheep cell haemolysis; this is due to an anticomplementary action and no other component of the system is affected. It inhibits the killing of *S. typhi* by g. pig or rat serum. Its anticomplementary action is due to the heparin which it contains. Mouse serum has an opsonic action, which is heat-labile and is inhibited by heparin. The inhibition of phagocytosis by heparin is due to its anticomplementary action. The depression of bacteriolysis and of various phagocytic functions may be ascribed to a common cause—anticomplementary action.

A number of substances with anticoagulant and anticomplementary properties were compared. They all had resistance-lowering activity when injected into mice with particulate matter in a viscous medium.

The possible roles of anticomplementary and anticoagulant effects in promoting infection were discussed.

HEALD, P. J. (1952). **The fermentation of pentoses and uronic acids by bacteria from the rumen contents of sheep.**—*Biochem. J.* **50,** 503-508. [Author's summary copied *verbatim*.] **74**

A procedure is described for the preparation of solid and liquid media which closely reproduce conditions in liquid from the rumen of sheep. Using these media seventeen strains of Gram-negative coliform rods of an intermediate type have been isolated in pure culture. The products of fermentation (formic acid, acetic acid, lactic acid, ethanol, butyleneglycol and acetoin) formed by five of these strains from xylose, glucuronic acid, glucose and cellobiose, show marked differences both as regards the substrate and the strains of organism used. The fermentation of xylose and glucuronic acid appears to follow a pathway different from that followed in the fermentation of glucose.

See also absts. **125** (lysogenic bacteria); **300** (bacteriology of bovine rumen contents); **301** (isolation of *H. capsulatum* from mice); **302** (isolation of dermatophytes); **310 (report, Gold Coast Colony).**

DISEASES CAUSED BY PROTOZOAN PARASITES

MORNET, P., LALANNE, A. & CISSOKO, M. (1952). Trypano-prévention chimiothérapique des zébus en A.O.F. **[Prophylactic chemotherapy in bovine trypanosomiasis.]**—*Bull. Soc. Path. exot.* **45,** 51-55. **75**

The incidence of trypanosomiasis among zebu cattle during transfer to new territories was reduced from 70% to *nil* by antrycide. The treatment was safe but expensive. Dimidium chloride was almost as effective. Naganol, lomidine and tartar emetic were ineffective; the last caused deaths.—N. DEAN.

NANI, S. & VERGATI, A. (1950). Contributo allo studio della infezione sperimentale da Tripanosoma evansi. **[Experimental *Trypanosoma evansi* infection.]**—*Atti Soc. ital. Sci. vet.* **4,** 710-726. [English and French summaries.] **76**

This work was done to observe the different host-parasite reactions and relationships of *T. evansi* in various animals. The literature on the subject was reviewed. The tissues of a rat killed in the final stages of parasitism were emulsified and inoculated into a dog. The organisms

were then passaged through seven dogs by injections of infected blood, and from the dogs into two sheep, two goats, two rabbits, two g. pigs, rats, mice, pigeons and poultry. Only the birds were resistant. The course of the infection, the symptoms and the blood picture as well as the P.M. findings were carefully recorded in the animals here considered. They do not differ in any marked way from those described by previous authors. One sheep was much more resistant than the other and it was hard to find parasites in the blood microscopically. Tables and graphs are given showing the morphological variation of the parasite in the different hosts.
— R. G. MARES.

KRANEVELD, F. C., HOUWINK, A. L. & KEIDEL, H. J. W. (1951). **Electron microscopical investigations on trypanosomes. I. Some preliminary data regarding the structure of** *Trypanosoma evansi*.—*Proc. Konink. Ned. Akad. Wetensch.* Ser. C. **54**, 393-399. [In English. Abst. from authors' summary.] 77

Electron micrographs of *T. evansi* reveal the following: The periplast contains longitudinal, nearly parallel fibrils. The flagellum consists of parallel isodiametric fibrils of which up to nine were counted, and a cytoplasmatic sheath. As these findings correspond in essentials with those of KLEINSCHMIDT & KINDER, it was concluded that pathogenic *T. evansi* and non-pathogenic *T. lewisi* are structurally similar.

The outer layer of the flagellum shows cross-striations at 0·05 μ intervals possibly indicative of contractility.

Near its base, the flagellum passes through a collar-like structure, supposedly the reinforced part of the periplast around the region where the flagellum leaves the body. The authors discussed the probability that this collar is identical with the ring-like structure at the anterior end of the body of *Leishmania tropica*, as described by LOFGREN [*V.B.* **21**, 1664]. Eight electron micrographs were reproduced.

HOARE, C. A. (1952). **The polymorphism of** *Trypanosoma evansi*. [Correspondence.]—*Trans. R. Soc. trop. Med. Hyg.* **46**, 367-368. 78

In a camel strain of *T. evansi* maintained in laboratory animals, the proportion of short forms varied from zero to 61%. H. considers that the only difference between *T. evansi* and the *T. brucei* group is the inconstancy of polymorphism in *T. evansi*.—JAS. G. O'SULLIVAN.

SENECA, H. & ROCKENBACH, J. (1952). **Fatal** *Trypanosoma cruzi* **infection in the white rat.**—*Science.* **116**, 14-15. 79

The authors succeeded in provoking a fatal *T. cruzi* infection in week-old rats by simultaneous inoculation of a large dose of actively growing trypanosomes and 6·25 mg. cortisone acetate. Virulence was enhanced by further passages. Controls injected with cortisone or inoculated with *T. cruzi* respectively continued to live.—J.D.

MUNIZ, J. & DOS SANTOS, M. C. F. (1950). **Technic of "conditioned hemolysis" applied in the diagnosis of American trypanosomiasis.** —*Hosp., Rio de Janeiro.* **38**, 617-620. [Abst. in *Trop. Dis. Bull.* **48**, 966-967. (1951), copied *verbatim*. Signed: J. C. BROOM.] 80

This test was developed to avoid the errors in diagnosis of Chagas's disasse which could arise from the presence in *Trypanosoma cruzi* of an antigen which reacts with the heterophile antibodies which may be found in uninfected persons. Before the test is carried out, the serum under investigation is inactivated and absorbed first with guineapig kidney, and then with normal sheep cells, to remove all heterophile antibody. In the same way, the guineapig complement is twice absorbed with normal red cells of the animal which provides the cells to be "sensitized".

To prepare the polysaccharide fraction used for sensitization, the parasites from 6- to 8-day cultures of *T. cruzi* are filtered through cotton and washed with normal saline in the centrifuge. To 0·5 ml. of the deposit is added 1·0 to 1·5 ml. of formamide; the suspension is shaken, and then heated for 10 to 15 minutes in a glycerin bath at 150°C. After cooling, 5 ml. of a mixture containing 95 parts of alcohol and 5 parts of 2N.HCl are added, and the mixture is thoroughly shaken for 15 to 20 minutes. The insoluble fraction is removed by centrifugation, and 10 ml. of pure acetone are added to the supernatant fluid. This precipitates the active fraction, which is separated and dried. From 2 to 3 ml. of saline are next added, and the reaction adjusted to *p*H 6·8–7 with sodium bicarbonate solution. Any insoluble material is removed, and the solution is left overnight at 5°C., after which the supernatant is separated from any further precipitate which may have formed. A precipitin test is carried out with specific antiserum to ensure the activity of the supernatant fluid.

For sensitization, red cells from a sheep, or the patient, are washed 4 times with saline, then 2 ml. of polysaccharide solution are added to 0·5 ml. of packed cells. The mixture is incubated for 2 hours at 37°C., and is shaken at intervals to keep the cells in sus-

pension. The cells are then washed 3 times with saline, and finally made up to a 0·5 per cent suspension. The sensitized cells should be used within 24 hours of preparation.

In carrying out the test, 0·5 ml. quantities of serial dilutions of serum are mixed with 0·5 ml. of sensitized cells and 0·05 to 0·1 ml. of complement, and the suspension is incubated at 37°C. Readings are made after 1 and 2 hours, the highest dilution of serum which produces haemolysis being taken as the titre.

This reaction differs from normal serological haemolysis in that the specificity is determined by the adsorbed polysaccharide, and not by the cells. The term "conditioned haemolysis" is therefore used to designate this phenomenon.

THOROLD, P. W. & PLOWRIGHT, W. (1952). **Investigations into delayed toxicity due to dimidium bromide. I. Field observations.**—*J. comp. Path.* **62,** 136-140. **81**

PLOWRIGHT, W., BURDIN, M. L. & THOROLD, P. W. (1952). **Investigations into delayed toxicity due to dimidium bromide. II. The effects of the re-administration of dimidium bromide to zebu cattle.**—*Ibid.* 141-151. [Authors' summaries modified.] **82**

I. Delayed reactions characterised by skin lesions typical of photosensitization were reported in 6% of cattle inoculated during 1950 with dimidium bromide. An examination of the pastures failed to reveal any poisonous plants which might have produced photosensitization. Other factors which might have played a part were discussed.

II. The results of re-inoculating cattle kept in groups under different climatic conditions with dimidium bromide were reported. Of 26 animals thus re-inoculated, 19 showed symptoms of photosensitization. In 12 out of 13 affected cases a direct positive van den Bergh reaction was obtained, while 4 out of 5 showing no clinical symptoms were also positive. The macroscopic and microscopic appearances of the lesions were described. The main changes apart from the skin were found in the liver.

HAUGEN, A. O. (1952). **Trichomoniasis in Alabama mourning doves.** — *J. Wildlife Mgmt.* **16,** 164-169. **83**

This outbreak of trichomoniasis in doves was discovered in Alabama early in 1950 when *Tr. gallinae* was identified and deaths were subsequently recorded in 43 of 67 counties. Most deaths occurred during June, July and August, after the spring migration during the nesting season.

Of 30 doves affected between May and September 1950, only three still had juvenile wing coverts and it was suggested that the reason for the small number of young birds may be that breeding was curtailed in birds which recovered from the disease; this was supported by the observation that the gonads of both males and females recovered during the breeding season showed reduced development.

Doves which died from trichomoniasis were found to be extremely emaciated and in some cases the oesophagus was completely occluded so that feeding would have been impossible.

Attempts to find carriers of the infection among doves shot during the hunting season were unsuccessful, but birds were sometimes observed with scar tissue in the throat region.

Recent decreases in the dove population are attributed to the disease.—L. P. JOYNER.

KENDALL, S. B. & MCCULLOUGH, F. S. (1952). **Relationships between sulphamezathine therapy and the acquisition of immunity to** *Eimeria tenella.*—*J. comp. Path.* **62,** 116-124. [Authors' summary modified.] **84**

Resistance to re-infection with *E. tenella* is developed by the 96th hour following initial inoculation.

Drug concentrations of 0·25% and 0·375% of sulphamethazine in the food have a selective effect on the second generation schizonts thereby controlling mortality from caecal coccidiosis. Drug concentrations of 0·50–1·0% interfere with the normal therapeutic effect by inhibiting developmental stages previous to the second generation schizonts.

In view of the well known therapeutic effect of the drug it can be assumed that sulphamethazine is coccidiostatic to all developmental stages previous to the second generation schizonts to which it is coccidiocidal. Alternatively, it is suggested that a coccidiostatic effect on the second generation schizont is reinforced at therapeutic levels of the drug, by the naturally developing immunity.

It is concluded that the use of an excessively high concentration of the drug is not only unnecessary but may produce untoward results as instanced by the occasional failure of sulphamethazine treatment under field conditions. The therapy must be confined, as far as possible, to the later stages of the development of the parasite.

STEWARD, J. S. (1952). **The ineffectiveness of mepacrine in the treatment of coccidiosis of chickens, mice and sheep.**—*J. comp. Path.*

62, 69-79. [Author's summary copied *verbatim*.] 85

Mepacrine appeared to be without therapeutic value against severe coccidiosis in birds. In experimental coccidial infection in mice there was definite evidence of activity at high dosage rates. In spontaneous acute coccidiosis in sheep even high doses of mepacrine appeared to be without effect.

HORTON SMITH, C. & LONG, P. L. (1952). **Nitrofurazone in the treatment of caecal coccidiosis in chickens.**—*Brit. vet. J.* **108,** 47-57. [Authors' summary and conclusions modified.] 86

Nitrofurazone is an effective coccidiostatic agent and is a valuable means of controlling established infections of caecal coccidiosis when fed to chickens at a food concentration of 0·022% for seven days. It is of value as a preventive when fed at a concentration in the food of 0·011% for ten days to chicks kept on litter which may be heavily infested with coccidia. The drug permits the normal development of immunity in chicks exposed to infections of *Eimeria tenella* during treatment.

The action of nitrofurazone is partly schizontistatic and partly schizonticidal.

REDMOND, W. B. (1952). **Influence of cortisone on natural course of malaria in the pigeon.** —*Proc. Soc. exp. Biol., N.Y.* **79,** 258-261. [Author's summary slightly modified.] 87

Cortisone has been found to increase markedly the parasitaemia in pigeons infected with *Pl. relictum*. The increase is most apparent following the primary crisis. In this strain of malaria in which no relapse occurs normally cortisone was without effect on the latent infection.

ABDULIN, M. G. (1951). **[Haemosporidin LP_2 in *Babesia* infection in horses.]**—*Veterinariya, Moscow.* **28,** No. 8. pp. 40-41. 88

Subcutaneous injection of 0·0002–0·0003 g. per kg. of the urea preparation "LP_2" [composition not stated: see also *V.B.* **21,** 3008] in 2% solution proved effective in causing rapid clinical recovery to commence in 20–24 hours, when no parasites were found in the peripheral blood. Some of the "LP_2" had been kept for nearly four years at temperatures varying from −28°C. to room temperature.—F.A.A.

PRICE, K. E., POELMA, L. J. & FABER, J. E. (1952). **Preparation of an improved antigen for anaplasmosis complement-fixation tests.** —*Amer. J. vet. Res.* **13,** 149-151. 89

After removal of the serum, the packed cells were lysed, spun at high speed and repeatedly washed to remove haemoglobin. This antigen was found superior to that prepared by the method of Mott & Gates, probably because of the removal of more extraneous material resulting in an increased concentration of parasites and a decreased anti-complementary activity.—JAS. G. O'SULLIVAN.

COHRS, P. & CARSTENSEN, H.-C. (1952). Toxoplasmose beim Hund. **[Toxoplasmosis in dogs.]**—*Dtsch. tierärztl. Wschr.* **59,** 161-165. 90

A general article devoted mainly to the clinical symptoms and pathology of toxoplasmosis in dogs. The authors found the condition in two dogs and one silver fox out of 1,517 Canidae examined P.M., and had also examined 22 experimentally infected dogs.

—M. L. CLARKE.

GEISSLER, H. (1952). Toxoplasmose bei Hühnern. **[*Toxoplasma* infection in fowls.]** —*Dtsch. tierärztl. Wschr.* **59,** 166-168. 91

Four young fowls, inoculated with *T. gondii* from mice, died in 22–60 days. Lesions occurred in the liver, spleen, kidney and intestine, and the peritoneal exudate proved infective to mice.—M. L. CLARKE.

SARWAR, M. M. (1951). **Occurrence of *Globidium gilruthi*, a protozoon parasite of sheep and goats, from the Indo-Pakistan sub-continent.**—*Parasitology.* **41,** 282. 92

The condition, reported for the first time, is common in sheep and goats in the Punjab, the cysts occurring mainly in the cardiac region of the abomasum.

—JAS. G. O'SULLIVAN.

I. SPINDLER, L. A. & ZIMMERMAN, H. E., JR. (1945). **The biological status of *Sarcocystis*.** —*J. Parasit.* **31,** Dec. Suppl. p. 13. [Only abst. given. Abst from abst.] 93

II. SPINDLER, L. A. (1947). **A note on the fungoid nature of certain internal structures of Miescher's sacs (*Sarcocystis*) from a naturally infected sheep and a naturally infected duck.**—*Proc. helm. Soc., Wash.* **14,** 28-30. 94

III. CIEŚLA, E. (1952). Studia nad sarkosporidiozą zwierząt rzeźnych. **[Sarcosporidiosis of slaughter animals.]**—*Ann. Univ. M. Curie-Skłodowska.* Sect. DD. **6,** 193-215. [English and Russian summaries. Abst. from English summary.] 95

I. Sarcocysts removed aseptically from the muscles of swine were ruptured to release the spores and cultured in a glucose medium at 37°C. for 24 hours and subsequently at room

temperature. After a few days, minute coccoid bodies were budded off from the spores which developed into a septate mycelium with vertical hyphae bearing spores. The fungus was identified as *Aspergillus* sp.

Young pigs injected with or fed culture material had typical sarcocysts in their muscles when P.M. examination was made 4–6 months later.

Pigs, rats and mice fed sarcocysts discharged in the urine and faeces yeast-like bodies which in culture produced a fungus like that cultured from the glucose medium.

II. Histological sections of the parasites in the muscle were examined and S. considers that the "septae" dividing the Miescher's sacs into compartments are actually hypha-like structures and that the crescent shaped "spores" are attached to these "hypha-like" structures after the manner of conidia in fungi. The staining characteristics of the hypha-like structures and of the "spores" are said to be those characteristic of fungi. These observations are considered to support the view that *Sarcosporidia* belongs to the fungi instead of to the protozoa.

III. Sarcocysts were present in almost 60% of cattle and 4% of pigs slaughtered in the Lublin district. Sarcocysts were not found in young calves. Isolated sarcocysts placed in a liquid medium [details not given] disrupt after some hours, the spores being so set free, and form mycelia and sporangia. These observations are considered to support those of Spindler in the U.S.A. [see preceding absts.] who suggested that sarcosporidia are fungi and not protozoa.—M.C.

See also absts. **303** (preparation of bacteria-free massive suspensions of ciliates); **310** (report, Gold Coast Colony).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

SERRA, A. & GUARINI, G. (1951). Sulla possibilità di ottenere sieri devianti antiaftosi dal bovino. **[On the possibility of obtaining specific foot and mouth disease serum from hyperimmunized cows.]** — *Zooprofilassi.* **6,** 490-495. [English summary.] **96**

In a previous note [*V.B.* **22,** 2054] the authors showed that it is possible to detect F. & M. disease antibodies in the serum of convalescent cows, by means of complement fixation, provided the unheated sera are chemically inactivated with 1·5% NaCl solution. In this study the same technique was applied to type diagnosis, using specific complement-fixing sera, obtained from hyperimmunized cows.—M. BERTANI.

REMLINGER, P. & BAILLY, J. (1952). Propriétés du sérum des chiens réfractaires à la rage. **[A study of serum of dogs resistant to rabies.]**—*Arch. Inst. Pasteur. Algér.* **30,** 111-114. **97**

In the course of work on rabies it was noticed that some dogs were resistant to the intracerebral injection of street virus. The serum of one of these dogs, which had resisted three injections of proved potent virus, as well as a "reinforced" virus obtained from sewer rats, over a period of two months, was mixed in varying dilutions with fixed virus and injected into g. pigs. Serum from a normal dog was treated in the same way to serve as a control. The latter mixture was lethal at all dilutions, but the former killed only at the higher concentrations of virus in serum. Previous work, however, had produced a serum from a similar dog capable of neutralizing ten times as much virus as in this experiment, and this irregularity is apparently to be found using other animals as serum producers. The authors discussed whether or not serum should be used as an adjunct to Pasteurian vaccination in persons bitten by rabid animals.—R. G. MARES.

MOROZZI, A. (1952). Prova sperimentale di vaccinazione antirabbica del cane con iniezione unica di vaccino formolato. **[Experimental immunization of dogs against rabies with a single injection of formolized vaccine.]** —*Zooprofilassi.* **7,** 201-209. [English and Spanish summaries.] **98**

M. outlined previous work on anti-rabies vaccines and emphasized the importance of the phenolized vaccine of Fermi. As a formolized vaccine has certain advantages the author tested one and found it satisfactory. He produced it from the brains of dogs infected by post-occipital injections of virus and killed on the eighth day when rabies was well in evidence. The brains were emulsified to form a vaccine in 0·4% formalin so that the final product contained 20% of cerebral substance.

Ten dogs of various sizes were vaccinated subcutaneously with 10 ml. of the vaccine, and after 20 days, these with ten unvaccinated controls were inoculated with 1 ml. of a 1% suspension of brains and cords from rabbits infected with street virus. All the dogs were kept together and observed for 100 days. Four of the controls developed classical furious rabies

and Negri bodies were easily demonstrable. Only one of the vaccinated dogs developed rabies. This was of the dumb form, the dog took the longest to die and Negri bodies were less evident.—R. G. MARES.

KODRNJA, E. (1952). Rezultati općih zaštitnih cijepljenja pasa protiv bjesnoće. **[Control of rabies in Yugoslavia by vaccination.]**—*Vet. Arhiv.* **22,** 19-50. [French and German summaries. Abst. from French summary.] **99**

There are about 1,710,000 dogs in Yugoslavia, over 50% of them unregistered or ownerless. As police measures and destruction of ownerless dogs were inadequate to control rabies, compulsory vaccination was started in 1946 and by 1950 1,585,559 dogs had been vaccinated and 302,098 dogs had been killed. More dogs were vaccinated in some parts of the country than others and three different vaccines were used. These all contained 1 g. of cerebral substance per 1 ml. dose. The incidence of serious paralysis after vaccination was less than 0·05%; 0·25% of the vaccinated dogs developed abscesses at the site of injection and 0·048% died. Immunity broke down in nine cases presumably vaccinated during incubation.

There was a steady decrease of rabies from 1,417 animal and 71 human cases in 1946 to 798 and 12 cases respectively in 1950. The incidence of rabies was greatest in those regions where least vaccination had been done.

—R. G. MARES.

REMLINGER, P. & BAILLY, J. (1952). Transmission à Tanger de la rage par le rat d'égoût. **[Transmission of rabies by sewer rats in Tangiers.]**—*Maroc med.* **31,** 105-107. **100**

Rabies virus isolated from a sewer rat resembled "fixed" virus (Institut Pasteur) in its short incubation period and in not forming Negri bodies.—F. B. LEECH.

TIERKEL, E. S., ARBONA, G., RIVERA, A. & DE JUAN, A. (1952). **Mongoose rabies in Puerto Rico.**—*Publ. Hlth Rep., Wash.* **67,** 274-278. **101**

The Indian mongoose, *Herpestis javanicus,* was found to have been the reservoir of infection in the first outbreak of rabies in Puerto Rico since 1933.—F. B. LEECH.

DOWNIE, A. W. & HADDOCK, D. W. (1952). **A variant of cowpox virus.**—*Lancet.* **262,** 1049-1050. **102**

The authors described the isolation from infected chick embryos of a variant of cow pox virus producing white, as opposed to the normal haemorrhagic, chorio-allantoic lesions.

—CLIVE BRIGGS.

DELPY, L. P. & MIR CHAMSY, H. (1949). Stabilisation des antigènes claveleux et préparation d'un vaccin mixte contre la clavelée et la fièvre charbonneuse. **[Stabilization of sheep-pox antigens and the preparation of a combined vaccine against sheep-pox and anthrax.]**—*Arch. Inst. Hessarek.* No. 6. pp. 15-17. **103**

By adsorbing sheep pox virus on to avirulent anthrax spores, a fairly stable vaccine has been prepared. This can be desiccated and kept for fairly long periods of time. It is safe and efficient as a combined vaccine.

—G. B. S. HEATH.

DELPY, L. P. & RAFYI, A. (1949). Recherches expérimentales sur le virus claveleux. Méthode d'immunisation employée en Iran. **[Sheep pox immunization in Persia.]**—*Arch. Inst. Hessarek.* No. 6. pp. 18-25. **104**

Because of the uncertain efficiency and high cost of old methods of immunization against sheep pox, a new vaccine has been developed from the indigenous virus. This is a selected strain which does not cause generalization on intradermal inoculation. 15,000,000 sheep have been vaccinated without accident. The vaccine must be used within two months after its preparation.—G. B. S. HEATH.

KONO, R., ASHIHARA, Y., MATUMOTO, M., SHIMIZU, T. & OKAZAKI, K. (1951). **Studies on the experimental infection of swine with human influenza virus, FM1 strain.**—*Jap. J. exp. Med.* **21,** 419-425. [In English. Abst. from authors' summary.] **105**

The experimental infection of swine with human influenza A-prime virus, FM1 strain, could be established by the administration of nasal washings, *via* the intranasal route through five generations serially. The growth of young swine was curtailed after infection, and four of them died after 71, 66, 48 and 38 days respectively. The virus was recovered from the lungs of such chronic cases. Details of the duration of persistence of the virus and quantity of virus contained in nasal washings and lung tissue were presented.

Slight variations in the immunological and biological pattern of the virus were observed after five serial passages.

SOOTER, C. A., HOWITT, B. F. & GORRIE, R. (1952). **Encephalitis in Midwest. IX. Neutralizing antibodies in wild birds of Mid-**

western States.—*Proc. Soc. exp. Biol., N.Y.* **79, 507-509.** **106**

Serum from a variety of wild birds was examined for neutralizing antibodies against St. Louis encephalitis and Western equine encephalomyelitis. In one area 13 out of 112 specimens involving seven species were positive for W.E.E. Of 68 samples tested for St. Louis encephalitis antibodies all were negative. In another area seven out of 28 specimens involving three species were positive for W.E.E. and all of six specimens tested for St. Louis encephalitis virus antibodies were negative.

—D. Luke.

I. Poddubski, I. V. (1951). **[Locality and incidence of equine infectious anaemia.]**—*Veterinariya, Moscow.* **28,** No. 6. pp. 29-32. **107**

II. Korotkikh, A. V. (1951). **[Epidemiology of equine infectious anaemia.]**—*Ibid.* pp. 32-35. **108**

I. The influence of ecology and of the quality of fodder on the incidence of equine infectious anaemia was studied. The disease occurs in summer and autumn when horse-flies and mosquitoes abound and chiefly around their breeding ground in low-lying and wooded districts.

K. fed 23 foals with various fodders and found that when a good quality fodder was provided greater resistance was acquired than when fodder lacking in vitamin B was used. The clinical picture and blood characteristics also altered according to the type of fodder given. He suggested that this probably explained the presence of three forms of the disease (acute or sub-acute, chronic and, rarely, latent) which he found in over 600 foals artificially infected with the same strain.

The figures from analyses of 300 samples of soil and the grass grown on each fell into three main categories which fitted the incidence of the type of disease. With a pH of 4·0 – 5·0 and a lime content of 0·035 – 0·2%, there was a 20–50% morbidity, with 40–60% fatal cases. With a pH of 6·4 – 7·0 and a lime content of 0·3 – 6·8%, the morbidity was low and cases that occurred were of the mild type.

Where "horse-flies" and mosquitoes were prevalent the incidence of the disease was higher; but with D.D.T. and benzene hexachloride treatment in summer, no cases occurred.

P. concluded that arthropods are the chief vectors of equine infectious anaemia and that with a good plane of nutrition the incidence is low.

II. Equine infectious anaemia was first diagnosed in the U.S.S.R. in 1934. K. found in a large province that the disease was confined to the marshy and wooded zone, mainly within 2–3 km. of the forests, where 99·7% of all cases occurred. In the dry steppes area, the incidence was only 0·93%; here water and trees—the habitat of mosquitoes, *Tabanus, Chrysops* and *Haematopota* flies and other blood-sucking insects—are restricted to occasional narrow valleys. A summer disease with a peak in July, it follows closely on the increase in the number of the above flies, these being about 30 times as prevalent in the marshy, wooded zone.

When large numbers of horses were moved during the second world war, the incidence of the disease was low in those from the dry steppes region imported into the marshy wooded zone and infected horses transferred to the steppes region recovered and did not spread the disease to local horses. K. suggested that the low incidence of insect vectors and the higher plane of nutrition were main factors in the low incidence of the disease in these horses.

Treatment of horses every ten days between May and September with D.D.T. and benzene hexachloride proved an effective prophylactic.—F.A.A.

Mukhachev, A. V. & Yakimov, N. N. (1951). **[Control of equine infectious anaemia according to the method described by Boshyan.]**—*Veterinariya, Moscow.* **28,** No. 8. pp. 36-37. **109**

A note on the use of a diagnostic allergen spoken of as "anemin Viev" and of a vaccine (no details of either given). All the 257 horses on a farm were tested with the allergen; 64 yielded positive, 33 doubtful and 160 negative reactions. All were then immunized with the vaccine, half of them being given a second dose 10–15 days later. After four months the reactions of the horses on the same farm to the allergen were 27 positive, 27 doubtful and 245 negative. During the ensuing year no further cases of infection occurred amongst the horses of either group.—F.A.A.

Filatov, P. V. (1951). **[Arterial and venous pressure in equine infectious anaemia.]**—*Veterinariya, Moscow.* **28,** No. 3. pp. 40-46. **110**

Daily records were made over a period of seven months of the arterial and venous pressures of 25 horses with chronic equine infectious anaemia.

With the first two paroxysms of pyrexia, the arterial pressure, both maximum and

minimum, usually rose. The range differed for each horse but roughly there were three main groups:—in 12 horses the rise was rapid, to a maximum of about 170 mm. and the minimum to about 60 mm. mercury; in nine horses the pressure began to mount gradually during the second paroxysm; in four horses the increase was small. Between these two paroxysms the maximum dropped to normal but the minimum stayed high or even continued to rise. During the subsequent paroxysms the corresponding rises in maximum were small, with a general tendency to be no higher than 80–90 mm. as cachexia developed. The minimum, on the contrary, continued to rise slightly.

The venous pressure, measured by a water column was as follows:—in 16 horses it began to rise fairly steadily with the first paroxysm; in four it rose rapidly; in the five remaining horses the rise in pressure was delayed. During the subsequent paroxysms it continued to mount in all cases until towards the last 2–3 weeks before death it had risen in some cases from about 100 mm., at the start of the clinical symptoms, to over 240 mm., thence falling sharply as the final stage of the illness became more severe.—F.A.A.

MÜLLER, L. F. & DORN, H.-J. (1951). Blutbild und Blutsenkung bei der Bornaschen Krankheit der Pferde. [**Blood changes and blood sedimentation in Borna disease.**]—*Exp. Vet.-Med.* **3**, 61-64. 111

Observations on the blood of 46 horses affected with Borna disease revealed red cell and granulocyte values in the normal ranges, and a decreased sedimentation rate. The lymphocyte counts were normal, or else there was an absolute lymphopenia, the number of lymphocytes tending to decrease as the disease progressed.—E. COTCHIN.

SACQUET, E. & TROQUEREAU, P. (1951-52). Essai de vaccination contre la peste bovine au moyen du virus capri-pestique dans le Nord-Est du Tchad. [**The use of goat-adapted rinderpest virus in French Equatorial Africa.**]—*Rev. Élev.* **5**, 45-50. 112

Rinderpest is the most important disease of zebu cattle in north-east Chad. Until 1949 it was controlled only by formolized vaccine. In this territory rinderpest is nearly always chronic and mouth lesions are not constant. This complicates the preparation and use of a killed vaccine. The use of a freeze-dried living goat adapted virus was prohibited by lack of apparatus so the so-called wet virus method was used.

Reactions in goats were judged by the criteria of Mettam & Thorne at Vom, and only those goats that satisfied them were used for vaccine production. Owing to the variations in reactions ten goats had to be inoculated at each passage to avoid losing the strain. Goats from some districts reacted better than others. At times the mortality was as high as 50% but the goat-adapted virus did not spread naturally among the goats; uninoculated goats proved susceptible to injection of virus even after 100 days in contact with inoculated animals.

Spleens could be preserved in the ice chamber of an ordinary kerosene refrigerator for at least 60 days without losing virulence and the authors considered that reactions were enhanced after refrigeration of the virus.

Twenty cattle were inoculated with 2 ml. of citrated blood and 20 with a suspension of spleen pulp; 17 had a thermal reaction, three had diarrhoea and four died; all 40 resisted subsequent challenge with 10 ml. of virulent blood from a natural case.

As a result of this trial 53,339 cattle under three years old were inoculated. There was 5% mortality among those living under harsh natural conditions; average mortality being 2·4% was higher than that obtained by Mettam in Nigeria using freeze-dried vaccine. 1·34% had diarrhoea and sometimes mouth lesions.

The authors concluded that, while this method is not ideal, it is preferable to the use of a dead vaccine if supervision is adequate.

—R. G. MARES.

BROTHERSTON, J. G. & PURCHASE, H. S. (1952). **The use of lapinised rinderpest virus vaccine to replace the annual inoculation of cattle previously protected with inactivated formolised spleen vaccine.**—*Brit. vet. J.* **108**, 96-100. 113

Lapinized rinderpest virus has already been proved an effective immunising agent for many different breeds and types of cattle in different countries. As it provokes a very mild reaction however it was thought that it might not be suitable for use on cattle with a declining immunity from a previous inoculation with inactivated virus. If this were so it would make the change over to the use of lapinized vaccine risky. The authors therefore carried out tests on the state of immunity in cattle inoculated a year previously with formalin-inactivated vaccine, on the immunity superimposed on this by lapinized vaccine and on the immunity produced by lapinized vaccine alone.

Fourteen high grade animals of the same

age, from a farm where annual inoculation with a formalin-inactivated virus was the rule, were needle challenged with stock Kabete "O" strain virus when they were 72 days overdue for their annual inoculation. Only three had a mild thermal reaction and could be considered partially immune. The others had a severe reaction. Thirteen similar cattle from the same farm were given proved potent lapinized vaccine when they were 50 days overdue for their annual inoculation. They were challenged after a further 25 days when 12 showed no reaction or symptoms, and only one had a mild thermal reaction.

One hundred and twenty susceptible, unvaccinated yearlings from the same farm were inoculated with lapinized virus; ten resisted challenge after 25 days. The remainder are to be the subject of immunity and re-immunity tests with lapinized vaccine in a year's time.

On these results lapinized virus would appear to be preferable to formalin-inactivated virus for grade cattle. It is cheaper and easier to use, it provokes a milder reaction, and, as other work has shown, confers a more rapid protection that lasts at least as long.

—R. G. MARES.

BINDRICH, H. (1951). Untersuchungen über die pH-Resistenz des Virus der Hundestaupe. **[Research on pH-resistance of the distemper virus.]**—*Exp. Vet.-Med.* **4,** 119-126. **114**

The optimal pH value for distemper virus is 7·0. It is fairly resistant against more acid pH values but is quickly destroyed if the pH is on the alkaline side. 3% NaOH is a rapid and effective disinfectant for virus suspensions and for kidney tissue containing virus.

—A. MAYR-HARTING.

DEDIÉ, K. (1951). Die Anwendung der Komplementbindung bei der Hundestaupe. **[Use of complement fixation in distemper.]**—*Exp. Vet.-Med.* **4,** 127-136. **115**

Complement fixation is suitable for diagnosis of distemper in dogs and for its differentiation from canine virus hepatitis. It may also be successfully applied to fur animals.

—S. E. FOX.

DEDIÉ, K. & KLAPÖTKE, E. (1951). Die Züchtung des Virus der Hundestaupe im Gewebsexplantat. I. Die Eignung verschiedener Gewebe. **[Cultivation of the distemper virus on tissue explants. I. Suitability of various tissues.]**—*Exp. Vet.-Med.* **4,** 137-146. **116**

Tissue cultures of young dogs infected experimentally with distemper contained the virus passively transferred on the first day. They then became negative for between two and seven days; the virus could then, after multiplication in the tissue culture, be demonstrated for 3–6 days by infection experiments. Those organs which, in the infected dog, are most suitable as antigens for the complement-fixation test, are also most suitable as tissue cultures for growing the distemper virus. They are: spleen, lung, intestinal lymph nodes and testes.—A. MAYR-HARTING.

GLEDHILL, A. W., DICK, G. W. A. & ANDREWES, C. H. (1952). **Production of hepatitis in mice by the combined action of two filterable agents.**—*Lancet.* **263,** 509-511. [Authors' summary modified.] **117**

The authors reported further work [see also *V.B.* **22,** 2827] concerning a virus causing fatal hepatitis in mice. This was obtained by taking blood or viscera of normal mice of one strain (P.) and making serial intraperitoneal passages in young mice of another strain (V.S.). The hepatitis could be prevented by a single dose of terramycin or aureomycin.

The mouse-hepatitis virus (M.H.V.) has now been resolved into two components, one relatively stable (S.) and one more labile (L.). S. is obtained from mice inoculated with M.H.V. and treated by terramycin, to which it is resistant; or by allowing suspensions of M.H.V. to stand at about 20°C. for 24 hours; the L. then dies out. L. is present in M.H.V. suspensions to higher titre than S. and is obtained by passage at limiting dilutions. Neither L. nor S. when given separately to recently weaned V.S. mice produces any evident disease; when given together they cause fatal hepatitis. L. and S. are both transmissible in series and are presumably viruses—either separate entities or, less probably, phases or variants of one virus. S. is apparently smaller than L.

MIRICK, G. S., SMITH, J. MACL., LEFTWICH, C. I., JR. & LEFTWICH, W. B. (1952). **The enhancing effect of urethane on the severity of infection with pneumonia virus of mice (PVM).** — *J. exp. Med.* **95,** 147 - 160. [Authors' summary copied *verbatim.*] **118**

Urethane, given parenterally or orally to mice, increased the severity of PVM infection. Not only were the lesions more extensive but mice could be infected with smaller inocula of virus and the multiplication of virus in the lung was enhanced. There was atrophy of lymphoid tissues but no suppression was noted of antibody formation. No relation could be found between PVM infection and the development of pulmonary adenomas in mice.

HANSON, R. P., UPTON, E. & BRANDLY, C. A. (1951). **Pneumopathogenicity of Newcastle disease virus for adult white mice.**—*J. Bact.* **62,** 545-547. [Authors' discussion and summary copied *verbatim.*] 119

Newcastle disease virus in the form of undiluted allanto-amniotic fluid sometimes produces pneumonia and death when introduced into the nares of partially anesthetized weanling [21–30 days old] mice. Virus can be irregularly demonstrated in the pneumonic lungs of the infected mice by chicken embryo inoculation, but transmission of the pneumonia by intranasal instillation of suspensions of the ground lung material was not accomplished in weanling mice in the two trials. Virus was not demonstrated in the lungs of mice receiving suspensions of pneumonic lungs.

The pneumopathic activity of Newcastle disease virus varied according to strain from those that were lethal to those that produced little, if any, involvement. The degree of pneumopathogenicity has not been related to the degree of neurotoxicity, nor has it been positively associated with the lethality of the strain for chickens. The pneumopathic property of the virus for the mouse is apparently less stable than the infectivity of the virus for the embryonating egg, but the diversity of these characteristics has not been ascertained.

Varying degrees of pneumopathogenicity for mice have been demonstrated among 18 strains of Newcastle disease virus when introduced into the nasal passages. Some produced extensive pneumonia and death of 50 per cent of the mice within 96 hours. Others did not induce an observable response in any of the animals.

BUZNA, D. & HODOSY, J. (1951). **The time required for the development of resistance following treatment with (Hertfordshire) vaccine. [Newcastle disease.]**—*Acta vet. hung.* **1,** 107-110. [In English. Russian summary.] 120

Young fowls vaccinated subcutaneously with 1 ml. of 1:1,000 dilution of vaccine [no details are given of the nature of the vaccine], were injected with 10 million lethal doses of the street virus of Newcastle disease at varying periods after vaccination. Of those injected at 24 hours, only one succumbed whilst the remainder developed either no symptoms or moderate symptoms from which they recovered. After 48 hours no symptoms occurred.

The authors suggested that the protection obtained in so short a time can best be explained by the interference phenomenon rather than by antibody production.—A. H. LINTON.

DOBSON, N. (1952). **Newcastle disease.**—*World's Poult. Sci. J.* **8,** 107-113. 121

D. reviewed the distribution of Newcastle disease throughout the world. Random samples of poultry carcasses imported into England from Europe were examined and showed a high incidence of infection. The use of vaccines was discussed.—D. LUKE.

LLOYD, E. C. (1952). **Newcastle disease.**—*World's Poult. Sci. J.* **8,** 99-107. 122

L. reviewed the progress of the recent epizootic of Newcastle disease in Great Britain. The importation of poultry carcasses from Europe was implicated as the source of the infection. Both the acute and subacute types of the disease appeared. Control measures were discussed.—D. LUKE.

JOHNSON, E. P. & GROSS, W. B. (1952). **Vaccination against pneumoencephalitis (Newcastle disease) by atomization or nebulization in incubators and chick boxes with the B_1 virus.**—*Vet. Med.* **47,** 364-366 & 371. [Abst. from authors' summary] 123

The authors referred to certain drawbacks in the use of the method previously described [*V.B.* **21,** 2917] of exposing chicks to the B_1 (low virulent) virus in the incubators in which they had been hatched. They described an alternative method whereby day-old chicks were exposed to the virus in the chick box in which they were placed when removed from the incubators, the box being covered by a cellophane hood. Forced air for the nebulizer was obtained by the use of an electric paint-spray pump giving a force of approximately 4 lb. of pressure per sq. inch. By this method a group of 100 day-old chicks could be satisfactorily treated with the B_1 virus every three minutes.

COLBERT, J. W., JR., BUNGARDS, L. & KNOWLTON, M. (1952). **Aureomycin, chloromycetin and terramycin in treatment of acute viral hepatitis.**—*Proc. Soc. exp. Biol., N.Y.* **79,** 339-343. [Authors' summary copied *verbatim.*] 124

The usual course of acute viral hepatitis in young adult men was not significantly changed by the use of aureomycin or chloromycetin. Although terramycin administration was associated with a more rapid return to normal of liver function tests than observed in a control group, further investigation would be required to determine the significance of this observation.

LWOFF, A. (1952). **Lysogenic bacteria, II.**—*Endeavour*. **11**, 132-136. [For part I, see *V.B.* **22**, 3311.] **125**

Lysogenic bacteria contain one or more specific particles—probacteriophages, endowed with genetic continuity and consisting of deoxyribonucleic acid molecules. L. advanced the hypothesis that the probacteriophage is a mutated plasmogene and, phylogenetically, an endogenous particle. It is a non-infective and non-pathogenic precursor of bacteriophage. The transformation of probacteriophage to bacteriophage is governed by external factors. Under certain conditions the probacteriophage can develop into a virus. Lysogenic systems probably represent the primary way in which bacteriophages are perpetuated.—W. R. BETT.

JOKLIK, W. K. (1952). **Intracellular growth of phages T1 and T2.**—*Brit. J. exp. Path.* **33**, 359-367. [Author's summary modified.] **126**

J. described a method of analysing infected bacteria for intracellular phage, which involves arresting phage multiplication by rapid cooling to 0°, and disruption of the bacteria in a mechanical shaker.

This technique was used in investigating (a) the intracellular growth of phages T1 and T2, using both singly- and multiply-infected bacteria; (b) the nature of the adsorption of these two phages on bacteria suspended in solutions containing mono- and divalent metal ions but no source of energy.

ORMSBEE, R. A. (1951). **A biochemical study of experimental Q fever infection in the bovine mammary gland.**—*Publ. Hlth Rep., Wash.* **66**, 1685-1693. [Author's conclusions modified.] **127**

The injection of suspensions of *R. burneti* into the udders of cows resulted in the following changes in the composition of their milk: increases in total nitrogen, non-casein nitrogen, chloride, butter fat, non-fat solids, and pH; decreases in casein, lactose, milk volume, and water. No changes in blood haemoglobin resulted. Major fluctuations in these constituents disappeared within eight days following injection. Similar changes occurred in control animals injected with chick yolk-sac suspension, but the changes were of smaller magnitude and disappeared more quickly.

The changes are different from those that occur with chronic bacterial mastitis in that the butterfat and non-fat solids increased in concentration.

SCHMID, E. E., JAYASUNDERA, L. B. T. & VELAUDAPILLAI, T. (1952). **Survey on the occurrence of Q-fever in Ceylon.**—*Ceylon med. J.* **1**, 65-68. [Authors' summary modified.] **128**

Q fever is reported to occur in Ceylon in man (clinical cases and occupational infections), and domestic animals. This investigation suggests that Q fever is a graver problem in Ceylon than typhus.

ROSATI, T. & MOROZZI, A. (1952). Febbre Q indagini sperimentali sul contagio fra gli animali di specie ovina. **[Experimental transmission of Q fever in sheep by contact.]**—*Ig. Sanit. pubbl.* **8**, 269-296. **129**

From tests of transmission of Q fever by contact between infected and healthy sheep, using a total of 75 sheep over a period of 18 months, the authors found that an infected sheep could transmit the infection at the moment of parturition provided that it had become infected during the same pregnancy or immediately before it. Infected sheep do not appear to transmit infection either to other sheep or to human beings when a few weeks have elapsed after the first parturition following infection. During the first parturition following infection there is abundant elimination of rickettsia infective to other animals and to man; during the second parturition following infection there is either no elimination of rickettsia or elimination of fewer rickettsia and no danger of contagion for either animals or man.—F.E.W.

HAUDUROY, P. (1952). Les virus latents. **[Latent viruses.]**—*Rev. Immunol.* **16**, 222-241. **130**

Latent viruses are present and multiply in a host that lives like a normal individual. The viruses never become manifest unless they are brought into an indicator individual of the same or another species. Some other viruses are only provisionally latent; these can be activated to produce symptoms in their normal host, by some mechanism usually unknown to us, perhaps a deficiency. A virus, present in *Drosophila*, becomes manifest only by rendering its host susceptible to CO_2 poisoning to which *Drosophila* are normally very resistant. Numerous examples of latent viruses in plants, insects and higher animals were discussed.

—A. MAYR-HARTING.

CABASSO, V. J., MARKHAM, F. S. & COX, H. R. (1951). **Stabilizing action of glycerine on hemagglutination of egg-adapted mumps, Newcastle disease and influenza viruses.**—*Proc. Soc. exp. Biol., N.Y.* **78**, 791-796. [Authors' conclusions copied *verbatim*.] **131**

Experimental observations based on the behavior of two strains of mumps virus having hemagglutinins of markedly different stability show that the addition of glycerine has a marked stabilizing action on the hemagglutinating antigen. Without glycerine, at 37°C. the H strain of mumps virus in buffered saline containing 0·1% formalin, loses its hemagglutinating activity overnight and the E strain in 3 to 4 weeks. In contrast, the H strain in 50 per cent glycerine suspension, also containing 0·1% formalin, maintained useable titers for 2 to 3 weeks at 37°C., and under the same conditions the E strain showed little or no loss of activity at the end of 16 weeks. Glycerine concentrations as low as 10% markedly enhanced the stability of the E strain while the stability of hemagglutinating activity of the H strain was dependent to a much greater degree upon an increased concentration of glycerine. The hemagglutinating activity of antigens prepared from suspensions of Newcastle disease virus and influenza virus (PR8) was similarly stabilized by the addition of 50% glycerine.

See also abst. **310** (report, Gold Coast Colony).

IMMUNITY

HAYES, S. P. & DOUGHERTY, T. F. (1952). **Effect of ACTH and cortisone on antibody synthesis and rate of disappearance of antigen.**—*Fed. Proc.* **11**, 67. [Only abst. given. Abst. from abst.] 132

A.C.T.H. or cortisone decreased the amount of antibody formed in mice injected with horse serum, but did not alter the time of appearance or of circulation of antibodies once they were formed. Levels rose promptly when the drug was withdrawn. A greater amount of antibody was required to produce fatal anaphylaxis in the treated mice, suggesting that the hormones accelerated the disappearance of antigen from the tissues.—N. DEAN.

HAYES, S. P. & DOUGHERTY, T. F. (1951). **Adrenal cortical secretion and rate of formation of antibody.**—*Amer. J. Physiol.* **167**, 793. [Only abst. given. Abst. modified.] 133

Local antibody formation was suppressed and rate of formation of circulating antibody was enhanced in mice by cortisone acetate incorporated with *Salmonella* and *Pseudomonas* antigens contained in capillary glass tubing depots. Agglutinins appeared in loose subcutaneous tissue at the site of antigen emplacement in 4 days and in the circulation within 8 days in non-cortisone treated animals. When cortisone was incorporated with antigens, antibody appeared in the blood before it was found at the site of the antigen depot. Histological studies revealed that cortisone inhibited the inflammation produced by the antigen. It is postulated that the suppression of the inflammatory response accounts for the wider distribution of the antigenic agents. Administration of an amount of A.C.T.H. equivalent to 1 mg. Armour standard LA-la given daily produced partial suppression of antibody formation when a single injection of antigen (horse serum) was given intravenously. The degree of suppression depended upon (a) dosage of antigen, (b) time elapsing after inoculation and (c) amount of hormone administered. Maximal antibody production appeared 8 to 10 days after antigen administration in the control animals. The time of appearance and duration of circulating antibody was not altered by A.C.T.H. administration in those animals in which antibody was formed. Thus, it is suggested that A.C.T.H. inhibits the quantity of antibody formed, but does not interfere with the time of appearance and duration of circulating antibodies. The authors discussed the mechanisms by which A.C.T.H. effects changes in antibody production.

I. LAWS, J. O. & WRIGHT, G. P. (1952). **The disposal and organ-distribution of radio-iodinated bovine serum proteins in control and specifically-sensitized rabbits.**—*Brit. J. exp. Path.* **33**, 343-353. [Authors' summary modified.] 134

II. LAWS, J. O. (1952). **The degradation of proteins labelled with radio-active iodine in control and sensitized rabbits.**—*Ibid.* 354-358. [Authors' summary copied *verbatim*.] 135

I. A comparison was made of the disposal of soluble antigens by specifically-sensitized and normal control rabbits, using radio-iodinated bovine serum albumin and bovine γ-globulin. Following their intravenous injection both these proteins disappeared from the blood in sensitized animals more quickly than in the corresponding controls. In both groups much of the circulating foreign protein appeared to have been removed by the liver. The excretion of radio-active iodine, in the form of dialysable compounds in the urine, also proceeded more rapidly in the sensitized rabbits. The prompter excretion of radio-active degradation products in the urine of the sensitized animals indicates that the secondary response characteristic of immuni-

zation is not associated with any prolongation of the retention time of the antigen in the tissues.

II. It has been shown by chromatography that both control and specifically-sensitized rabbits injected intravenously with a radio-iodinated foreign protein excrete the iodine in two forms: the greater part is present as inorganic iodide, the rest is organically-bound, presumably to a peptide. On hydrolysis of the radioactive organic compound a mixture of amino acids is produced, one of which behaves chromatographically like 3:5-diiodotyrosine. In specifically-sensitized rabbits the ratio of iodide to organically-bound iodine in the urine following injection with radio-iodinated foreign protein is significantly higher than in normal control animals.

PRIOUZEAU, M. (1952). Ictère hémolytique du muleton. **[Haemolytic jaundice in mule foals.]**—*Rec. Méd. vét.* **128,** 79-96. **136**

P. described the typical symptomatology of the condition and of two other forms less commonly noted, one in which the foal dies while too weak to feed and the other in which the foal is over-active but dies swiftly. He believes that jaundice of the mucosa may sometimes be seen at birth but before sucking. This together with P.M. evidence suggests that the disease process may start *in utero*. P. suggests that by analogy with purpura haemorrhagica diet may be revelant to the origin of the disease and prescribes salts and vitamins during pregnancy. He thus rejects iso-immunisation as the sole cause of the condition.—G. FULTON ROBERTS.

BRION, A. (1951). Sur l'immunisation expérimentale de la jument contre l'antigène-baudet et son évolution. **[Experimental immunization of mares against donkey blood antigen.]**—*C. R. Soc. Biol., Paris.* **145,** 1537-1538. **137**

One mare immunized against donkey blood during pregnancy bore a mule-foal; after sucking, the foal sickened with haemolytic disease but improved with exsanguination-transfusion and artificial feeding. When suckled again by the mare on the fourth day the foal sickened again and died. Another mare, previously immunized similarly but receiving no injections during pregnancy, bore a mule foal which it suckled; the foal remained healthy.

—G. FULTON ROBERTS.

DE LA RIVIÈRE, R. D., MILLOT, P. & ERQUEM, A. (1952). Les groupes sanguins des moutons. **[Blood groups of sheep.]**—*C. R. Acad. Sci., Paris.* **234,** 1714-1716. **138**

Sera prepared by iso-immunization of sheep have made it possible to group samples of blood from sheep. The distribution of these groups was studied in a number of different breeds of sheep.—G. B. S. HEATH.

COOMBS, R. R. A., HOWARD, A. N. & WILD, F. (1952). **Titration of antisera to soluble proteins on the basis of an agglutination reaction: conjugation of egg albumin and chicken serum globulin to the incomplete Rh antibody and the subsequent use of Rh-positive cells, sensitized by such conjugated incomplete antibodies, to titrate antisera against egg albumin and chicken globulin.**—*Brit. J. exp. Path.* **33,** 390-397. [Authors' summary modified.] **139**

A technique has been described for titrating antisera against soluble protein antigens on the basis of an agglutination reaction. The method involves the conjugation of the protein antigen with the incomplete Rh antibody. The anti-protein serum may then be titrated against red cells sensitized with the incomplete Rh antibody conjugated with the protein concerned. Using this method rabbit antisera against egg albumin and chicken serum globulin respectively were titrated. Inhibition tests with very dilute solutions of the respective antigens confirmed the specificity of the reactions.

Implications of the method were discussed. By its application it should be possible to measure incomplete or non-precipitating antibodies to soluble protein antigens. It is intended to apply the method to investigations on allergy.

OLITSKY, P. K. & TAL, C. (1952). **Acute disseminated encephalomyelitis produced in mice by brain proteolipide (Folch-Lees).**—*Proc. Soc. exp. Biol., N.Y.* **79,** 50-53. [Authors' summary copied *verbatim.*] **140**

Proteolipide A and B of Folch and Lees, a new group of lipoproteins, are capable of bringing about in mice acute disseminated encephalomyelitis indistinguishable from the affection induced by inoculation of whole brain tissue. The substance contains practically all of the encephalitogenic agent present in brain.

ROCHA E SILVA, M. (1952). **Concerning the mechanism of anaphylaxis and allergy.**—*Brit. med. J.* Apr. 12th, 779-784. [Author's summary slightly modified.] **141**

The author considers that much more work should be done by experienced dermatologists and allergists in extending the use of citrate therapy, not only locally but as sprays, to cases of asthma and to other manifestations of allergy. The idea of employing citrate resulted from the

experimental evidence of its potent effect as an inhibitory agent in the process of histamine release. Its therapeutic effect in allergic dermatitis is further evidence in favour of the participation of the factor of histamine release present in normal blood in an inactive state—a state that can be changed into an active one by treatment with the antigen-antibody complex, agar, inulin, starch, etc.—in the so-called anaphylatoxin or serotoxin. Since citrate appears to stop the whole process of activation it would constitute a potentially more efficient instrument than symptom-relieving agents such as the anti-histamines. Future research and clinical trials will decide whether the credit here given to citrate is justified.

GRAY, W. D., PEDRICK, L. & WINNE, R. (1951). **Effect of cortisone on anaphylactic response of guinea pig ileum.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 679-683. [Authors' summary modified.] **142**

Treatment of g. pigs during the period of sensitization to horse serum with 5 mg. per kg. of cortisone acetate daily for 20 days did not abolish the Arthus reaction or affect the level of tissue antibody as measured by the anaphylactic response of the isolated ileum. Injection of 25 mg. intraperitoneally 4½ and 6½ hours before the animals were killed likewise had no effect on the antigen-antibody reaction of the Arthus type. Ethyl alcohol, at a concentration of 0·8%, usually abolished the anaphylactic response. Some blockade of the antigen-antibody reaction by sodium salicylate was indicated. The histamine sensitivity of the isolated ileum was not affected by cortisone acetate treatment *in vivo* or *in vitro*.

See also absts. **7** (auto-antigens); **11-12** (anthrax); **14-15** (TB.); **18-21** (tuberculin test); **42** (pullorum disease); **52** (fowl spirochaetosis); **58-59** (tetanus); **89** (anaplasmosis); **96** (F. & M. disease); **97-99** (rabies); **103-104** (sheep pox); **106** (St. Louis encephalitis); **112-113** (rinderpest); **114-116** (distemper); **120-123** (Newcastle disease); **310** (report, Gold Coast Colony).

PARASITES IN RELATION TO DISEASE [GENERAL]

CAULLERY, M. (1950). Le parasitisme et la symbiose. **[Parasitism and symbiosis.]** pp. 358. Paris: G. Doin & Cie. 2nd Edit. **143**

In this classical work now in its second edition, parasitism is viewed from the standpoint of general biology in that it is, in essence, a special condition of the relationship that exists between every organism and its environment—in this case the environment provided by another organism.

There are grades in the intimacy of an association for which various names have been coined but which cannot provide us with precise meanings because of the sometimes ill-defined conditions they each denote. Commensalism, parasitism and symbiosis are artificial categories which are not discontinuous in nature and are, in reality, merely different aspects of the same general laws.

The author ranges widely, and with a wealth of documentation, from commensalism to inquilism and parasitism, through adaptations, specificity, reciprocal reactions of parasite and host, symbiosis between animals and plants, to symbiosis in plants.

A final chapter deals with the query "Is symbiosis a primordial characteristic of the cell ?" this chapter is of special interest. The facts of symbiosis can be assembled into a continuous series—zooxanthellae and zoochlorellae, lichens, mycorrhizas, nodular bacteria, yeasts in insects, luminous bacteria, and all the rest, but, as pointed out, these associations are deviations from the normal. Consideration is given to the theories of Pierantoni which were based on his researches into the symbiotic yeasts of insects and which endowed symbiotic organisms with a number of special functions as well as to those of Portier who reached somewhat similar conclusions as a result of his work on xylophagous insects.

On the basis of all the facts he has accumulated, the author concludes that no natural distinction exists between commensalism, parasitism and symbiosis when they are completely analysed as they are only indicative of degrees of specialisation to a way of life.

The descriptive material in this book will continue to form the foundation for much future discussion and change of view. There is, however, much to be said for the use of a term which will embrace all forms of relationship between parasite and host and we have the choice of two, parasitism and symbiosis, and the latter is, etymologically, just the term we want. A. de Bary invented the word "symbiosis" and used it in a collective sense to include antagonism and mutualism. Is there any valid reason why we should abandon the use of these terms which afford us both a stricter and truer classification of what we observe ?

The book is well indexed and illustrated and there is a bibliography of nearly six hundred references.—C. HORTON SMITH.

TODD, A. C. & BROWN, R. G., JR. (1952). **Critical tests with toluene for ascarids and bots in horses.**—*Amer. J. vet. Res.* **13**, 198-200. [Authors' summary modified.] **144**

A series of critical tests were conducted with toluene at the rate of 0·1 or 0·2 ml. per lb. body weight in weanling and yearling horses to determine its action against *A. equorum*, and against *Gasterophilus intestinalis* and *G. nasalis*.

At 0·2 ml. per lb., toluene killed and expelled 99·8% of the ascarids present in the small intestines of eight test animals in 24 hours. At 0·1 ml. per lb., it killed only 47·5% of the ascarids present in 12 test animals in 24 hours.

In the entire series of 22 test animals, toluene killed 80·69% of *G. intestinalis*, but only 23·76% of *G. nasalis* in 24 hours.

A comparison was made of the actions of toluene, sodium fluoride, and carbon disulphide on bots and ascarids. The authors stated that the tests were not considered sufficient to establish tolerance levels or to warrant the use of toluene in equine therapy.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

BARRETT, W. I., JR. (1952). **Control of house flies with methoxychlor in Texas dairy barns.** —*J. econ. Ent.* **45**, 90-93. [Abst. from author's summary.] **145**

Under conditions of these tests, methoxychlor provided at least 5–7 weeks' control of house-flies inside screened dairy barns and in unscreened barns surrounded by premises on which good sanitation to prevent fly larval development was maintained.

Masking of methoxychlor deposits with fly excrement on favoured fly resting places was evident as a major factor contributing to the failure to realize maximum benefit from this insecticide in unscreened dairy barns surrounded by uncontrolled fly larval development.

DALMAT, H. T. (1950). **Studies on the flight range of certain Simuliidae, with the use of aniline dye marker.**—*Ann. ent. Soc. Amer.* **43**, 537-545. **146**

While studying the association of onchocerciasis with certain Simuliidae in Guatemala and Mexico, D. marked individual flies with safranin bluish dye to study their flight range. The marked flies were detected by placing them in a solvent consisting of three parts ethyl alcohol, two parts glycerine and one part chloroform.

—M. J. LETHBRIDGE.

HEATH, G. B. S. (1951). **The sheep tick, *Ixodes ricinus* L. Eradication by dipping sheep.**—*Parasitology*. **41**, 209-223. **147**

Both D.D.T. and benzene hexachloride (B.H.C.) are effective dips for control of ticks, but since D.D.T. is ineffective against sheep scab (mange), B.H.C. is preferable (16% γ-isomer at 0·25% dilution). Shallow baths and head dipping seemed adequate, but oral administration of B.H.C. or treatment of pastures with it were ineffective. By stocking a pasture with sheep dipped sufficiently often to prevent any female tick from engorging, an almost tick-free area was obtained. Sheep born on this pasture and living there for 18 months remained uninfested although undipped. However, ridding a small area of ticks would cause sheep to lose their immunity to tick-borne diseases, with disastrous results if ticks were re-introduced. Also, adult females, engorging on cattle, hares and deer elsewhere might form a reservoir.

—BERYL A. KAY.

See also absts. **53** (non-biting flies transmitting *Leptospira*); **144** (toluene against bots).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

WILLMOTT, S. (1952). **The development and morphology of the miracidium of *Paramphistomum hiberniae* Willmott, 1950.**—*J. Helminth.* **26**, 123-132. [Abst. from author's summary.] **148**

W. described the eggs and the development and anatomy of the miracidium of *P. hiberniae* from cattle and made comparisons with *P. microbothrioides*, *Cotylophoron cotylophorum* and *Zygocotyle lunata*. He gave an account of the process of hatching and the length of life of the miracidium.

WILLMOTT, S. & PESTER, F. R. N. (1952). **Variations in faecal egg-counts in paramphistome infections as determined by a new technique.** — *J. Helminth.* **26**, 147-156. [Authors' summary modified.] **149**

A description of a technique for the collection of trematode eggs from cattle faeces, prac-

ricable for both laboratory and field work. There was a correlation between the number of eggs per g. of rectal contents and the number of adult paramphistomes in the rumen and reticulum of slaughtered cattle. The weekly and daily variations in faecal egg counts were studied.

KERR, K. B. (1952). **Butynorate, an effective and safe substance for the removal of *Raillietina cesticillus* from chickens.**—*Poult. Sci.* **31,** 328-336. [Abst. from author's summary.] **150**

An account of tests with a tetravalent tin compound, di-n-butyl tin dilaurate as an anthelmintic against *R. cesticillus* in poultry. A single dose by capsule, of 75 mg. per kg. body weight was the minimal dose found to be effective. It was also effective when administered in the feed. When administered alone or in combination with nicotine and phenothiazine no indication was found of an effect on the egg production of laying birds. K. suggested that a combination of all three would be useful.

LINDQUIST, W. D. (1952). **Infections of *Ancylostoma caninum* in abnormal hosts.**—*J. Parasit.* **38,** 80-82. [Author's summary modified.] **151**

Studies were made of cellular reaction to infective larvae of *A. caninum* in the lungs and skin of both cotton and laboratory rats. It appeared to be the same in both hosts, with encapsulation of the larvae in the skin, but not in the lungs.

ENIGK, K. (1950). Zur Entwicklung von *Strongylus vulgaris* (Nematoden) im Wirtstier. **[Development of *Strongylus vulgaris* in the host.]**—*Z. Tropen. Parasitol.* **2,** 287-306. [Abst. from English summary.] **152**

Five foals, raised free from strongyles, were each given from 800 to 8,300 viable larvae of *S. vulgaris per os.* All five died from haemorrhagic or anaemic infarction of the small and large intestine. In a further foal an oesophageal fistula was made surgically before it was dosed. Saliva from the fistula was examined for larvae and the foal died after ten days of observation.

Development of *S. vulgaris* up to the 20th day after invasion was as follows: while passing through the stomach and small intestine the larvae shed their sheaths. They entered the mucous membrane of the caecum and ventral colon, remained in the submucosa, and the third moult occurred during the first seven days. Unable to penetrate the walls of the larger arteries, the young fourth-stage larvae entered the submucous arterioles and migrated into the intima of the intestinal arteries. As a rule they could not pierce the lamina elastica interna. Larvae penetrated the lumen of the smaller arteries owing to the thinness of the intima. The fast-migrating larvae within small vessels had thrombic fibrin only at the tail end; in larger arteries migration was slow and a fibrinous cover enveloped the entire larva. Migration was rendered still more difficult in the aorta and the larvae became surrounded by round-cells. The majority of the larvae were collected in the anterior mesenteric artery.

A period of at least eight days was necessary for the larvae to find their way from the intestinal wall to the anterior mesenteric artery. On the 11th day they began to migrate into the ramifications of that artery; 15 days after invasion, migration slowed up and larvae were often found rolled up within the arterial wall or surrounded by a thrombus; later thrombi became covered with endothelium.

SPEDDING, C. R. W. (1952). **Variation in the egg content of sheep faeces within one day.**—*J. Helminth.* **26,** 71-86. [Abst. from author's summary.] **153**

S. discussed some factors limiting the value of faecal egg-counts. Variations of the egg-content of faeces within a day, investigated by counting the eggs in faeces collected at 2-, 3- or 4-hourly intervals over a period of 24 hours, were found to be considerable.

DESCHIENS, R. & PICK, F. (1948). Une particularité tinctoriale des oeufs d'*Ascaris megalocephala.* **[A staining peculiarity of eggs of *Ascaris equorum.*]**—*Bull. Soc. Path. exot.* **41,** 212-213. **154**

The internal membrane of the eggs of *A. equorum* gave a sky-blue coloration with iodine solution, but was not fermented by amylase. *Giardia* cysts give a similar coloration. The chemistry of the reaction was not established.—G. M. URQUHART.

CASAROSA, L. (1951). Sulla infestione sperimentale nella cavia con uova embrionate di Neoascaris vitulorum. Nota preventiva. **[Experimental infection of guinea pigs with *Ascaris vitulorum* ova. Preliminary note.]**—*Ann. Fac. Med. vet., Pisa.* **4,** 179-182. [English and French summaries. Abst. from English summary.] **155**

Similar lesions to those found in calves were demonstrated in g. pigs which had been fed eggs of *A. vitulorum.* This confirmed C.'s theory that such lesions were produced by ascaris larvae.—JAS. G. O'SULLIVAN.

ERHARDT, A. (1952). Betrachtungen über Oleum chenopodii und Mandelsäureisoamylester als Wurmmittel bei der Ascaridose des Hundes. **[Oil of chenopodium and isoamyl ester of mandelic acid against ascarids in dogs.]**—*Tierärztl. Umsch.* **7,** 239-240. **156**

Isoamyl ester of mandelic acid is as active as oil of chenopodium against ascarids in dogs and other animals and is more convenient to administer and much less toxic.—N. DEAN.

TODD, A. C. & STONE, W. M. (1952). **Effect of penicillin in the diet upon experimental *Ascaridia galli* infections in chickens.**—*Poult. Sci.* **31,** 202-203. [Abst. from authors' summary.] **157**

The anthelmintic action of two levels of procaine penicillin in the diet of chicks given experimental exposures to *A. galli* was tested. Administration of either 15 or 30 mg. penicillin per lb. feed resulted in reduction of numbers of the worms present on P.M. examination in comparison with numbers of worms recovered from exposed birds fed the basal ration only. The higher level of penicillin administration did not give greater anthelmintic action than the lower level.

VAUGHAN, A. W. (1952). **A report on canine filariasis.**—*Vet. Rec.* **64,** 454-455. [Author's summary modified.] **158**

Dermatitis or eczematous skin lesions with intense irritation constituted the prominent features in four cases of *D. immitis* infestation. A reliable technique for blood examination for the detection of *D. immitis* larvae was described. A note was given on treatment with "fouadin" (a trivalent antimony compound) and "banocide" (diethylcarbamazine).

MCGAUGHEY, C. A. (1952). **Filariasis of dogs in Ceylon. Treatment with diethylcarbamazine.**—*Vet. Rec.* **64,** 66-68. [Author's summary modified.] **159**

The incidence of filaria embryos in the blood in pure-bred or well-cared-for cross-bred dogs in Ceylon is approximately 33%, *i.e.* about the same as that found in street dogs by Crawford in 1933.

In two dogs adult *D. repens* were found; in three other dogs no adult worms were found on P.M. examination. It would appear that *D. repens* is the species of filaria most commonly infecting dogs in Ceylon.

Nine affected dogs were given prolonged courses of diethylcarbamazine, all except one at a dosage of 10 mg. per lb. body weight three times a day. Clinical improvement and reduction in the numbers of microfilariae were slow as compared with the results recorded in the treatment of *D. immitis* infections in the U.S.A. and Africa.

One case of violent allergic reaction to the drug was encountered; in this dog adult worms migrated through the skin to the exterior soon after the course of diethylcarbamazine was begun.

Prophylactic treatment with diethylcarbamazine in districts where infection is common would seem to be advisable.

LE ROUX, P. L. (1950). *Onchocerca cervicalis* **Railliet and Henry, 1910, is a doubtful synonym of *O. reticulata* Diesing, in Herman, 1841.**—*Trans. R. Soc. trop. Med. Hyg.* **44,** 5. [Only abst. given. Abst. from abst.] **160**

Examination of a fragment of a species of *Onchocerca* from the suspensory ligament of the forelimb of a horse in Budapest revealed that the "rugae" were more closely spaced than in *O. cervicalis* from the ligamentum nuchae of horses in England. No host-reaction to the presence of the living worms was clearly definable in sections of the affected suspensory ligament from the Hungarian horse.

—GEORGE M. URQUHART.

HAWKING, F. (1952). **A histological study of onchocerciasis treated with hetrazan.**— *Brit. med. J.* May 10th, 992-994. [Author's summary slightly modified.] **161**

Human patients in Uganda infected with *Onchocerca volvulus* were treated with hetrazan, and subcutaneous nodules containing adult worms and samples of skin containing microfilariae were removed for histological examination. There was no significant difference between nodules from five untreated patients and those from nine patients treated with hetrazan, and there was no evidence that hetrazan had produced any adverse effect upon the adult worms. In skin samples from untreated patients, microfilariae in the corium usually did not excite any reaction; if reaction was caused it was mild in degree and chronic in nature. In skin samples after treatment with hetrazan there were numerous foci of intense acute inflammation. Microfilariae were often present in these foci, and showed evidence of degeneration and destruction; but sometimes they were also present in normal connective tissue without exciting a reaction.

It is probable that the main action of hetrazan is to destroy microfilariae (probably by an opsonin-like effect), and that their destruction liberates some microfilarial product which excites an allergic reaction in the pre-

viously sensitized patient. Some microfilariae, however, are apparently less susceptible to the opsonin-like effect of hetrazan, and so they persist in the skin for long periods without doing visible harm.

The allergic reaction provoked by hetrazan in patients with onchocerciasis can be used as an additional means of diagnosis.

SHOHO, C. (1952). **Further observations on epizootic cerebrospinal nematodiasis: I. Chemotherapeutic control of the disease by 1-diethylcarbamyl-4-methylpiperazine citrate: preliminary field trial.**—*Brit. vet. J.* **108,** 134-141. [Abst. from author's summary.] **162**

Data are presented which indicate that 1-diethylcarbamyl-4-methylpiperazine citrate possesses a filaricidal activity in the disease in sheep, goats and horses now known as epizootic cerebrospinal nematodiasis. In the dosage employed in the field trials no toxic reactions were noted. The results were good and were of sufficient significance to justify extension on a large scale.

See also abst. **144** (toluene against ascarids).

WAGNER, O. & BAUER, F. (1952). Terit, ein neues hochwertiges Wurmmittel. **[An anthelmintic composed of tetrachlorethylene, γ-piperidino-α,α-diphenyl-n-butyric amide hydrochloride and 1-piperidino-3,3-diphenylpropane hydrochloride.]**—*Tierärztl. Umsch.* **7,** 92-93. **163**

In tests on 226 dogs and cats, this preparation proved effective against ascarids, hookworm and coccidia in a minimum dosage of 0·4 ml. per kg.—G. P. MARSHALL.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

BERTHELON, M. & TOURNUT, J. (1952). Le granulome de Roeckl est-il curable par la streptomycine? **[Streptomycin therapy of Roeckl's granuloma.]** — *Rev. Méd. vét.* **103,** 321-325. **164**

A ten-year-old cow with lesions of Roeckl's granuloma (the clinical diagnosis being supported by biopsy) showed clinical recovery after 12 doses of 1 g. of streptomycin, given thrice daily.—E. COTCHIN.

MONLUX, W. S. & DELAPLANE, J. P. (1952). **Hemangiomas in the skin of the chicken.**—*Cornell Vet.* **42,** 193-196. **165**

A clinical and pathological description of cases of multiple haemangioma in the skin of White Leghorn-cross pullets, of the kind described by Blakemore and Innes (1931).

—E. COTCHIN.

SACK, H. (1951). Das Phäochromozytom. **[Phaochromocytoma.]** pp. viii + 93. Stuttgart: Georg Thieme. DM 11.70. **166**

This monograph, although it contains adequate pathological details, is mainly of interest to the physician and the physiologist. The clinical features and physiological aspects of the paroxysmal or persistent hypertension associated with hormone-producing tumours of the adrenal medulla or other chromaffin tissue are dealt with in detail, and methods of clinical differential diagnosis are discussed.

—E. COTCHIN.

HJÄRRE, A. & ISAKSSON, A. (1950). Något om leukoser. **[Leucosis in cattle.]** — *Skand. Kreatursförsäkrings.* pp. 150-162. [Abst. from English summary.] [Published in *Medd. Stat. vet-med. Anst. Stockh.* 1950.] **167**

The incidence of leucosis in cattle in Sweden has increased from 0·25% in 1944 to 0·54% of all cattle slaughtered in Sweden. In 500 of the affected cattle the mean age was seven years four months, which is older than the average for Swedish cattle. The disease occurred, however, at all ages. The condition occurs mainly in the east of Sweden south of Stockholm; the distribution is shown on a map. There is no evidence that breed or sex affect incidence.

The authors suggested that the disease may be related to heredity, a virus, hormone action or possibly environmental conditions.

—H. BOYD.

NUTRITIONAL AND METABOLIC DISORDERS

SCHÜRCH, A. F., CRAMPTON, E. W., HASKELL, S. R. & LLOYD, L. E. (1952). **The use of chromic oxide in digestibility studies with pigs fed *ad libitum* in the barn.**—*J. Anim. Sci.* **11,** 261-265. [Authors' summary modified.] **168**

The chromic oxide method for determining digestion coefficients with pigs was shown to

yield similar results to the conventional collection method. A tentative procedure for the determination of digestion coefficients during comparative feeding trials with *ad libitum* barn feeding was described.

WEBER, W. (1952). Die Fütterung des Mutterschweines. **[Nutrition of the sow during pregnancy and suckling.]**—*Schweiz. Arch. Tierheilk.* **94,** 137-145. [English, French and Italian summaries.] **169**

Useful practical details of suitable diets were given. The significance of the starch equivalent was discussed.—ROY MACK.

NORDIO, C. B. (1952). L'azione anemizzante delle cipolle studiata nei polli. **[Anaemia in fowls following feeding with onions.]**—*Arch. Vet. Ital.* **3,** 63-76. [English, French, German and Spanish summaries. Abst. from English summary.] **170**

N. found that the addition of large quantities of onions to the daily ration of fowls caused a severe anaemia.

MILLER, O. N. & RIGDON, R. H. (1952). **Pancreatic fibrosis in ducklings as result of nutritional deficiency.**—*Fed. Proc.* **11,** 422. [Only abst. given. Abst. from abst.] **171**

Extensive fibrosis of the pancreas was found in young ducklings fed a purified diet. Addition of the second mother liquor from crystallisation of glucose reduced the incidence from 80–90% to 20%. Ducks raised on natural foods were free from pancreatic fibrosis.

—CHARLOTTE M. WOOD.

MASSON, F. M. & OXFORD, A. E. (1951). **The action of the ciliates of the sheep's rumen upon various water-soluble carbohydrates, including polysaccharides.**—*J. gen. Microbiol.* **5,** 664-672. [Authors' summary modified.] **172**

When holotrich ciliates of hay-fed sheep's rumen acted upon water-soluble carbohydrates under conditions comparable with those in the rumen save for the absence of appreciable bacterial competition, only glucose, fructose, sucrose, inulin, bacterial levan (from *Bacillus megatherium*) and to a lesser extent cellobiose were utilized for rapid and extensive storage of iodophilic polysaccharide granules [cf. OXFORD (*V.B.* **21,** 2384)]. No other soluble carbohydrate tried (including maltose) was so utilized. When polysaccharide storage did take place the product always gave a purple colour with iodine, and had the properties of a starch rather than glycogen. Storage of starch by oligotrich ciliates was much slower than with holotrichs, and did not take place with cellobiose as substrate. Holotrich ciliates continued to replace themselves in the sheep's rumen even when large volumes of rumen contents were periodically withdrawn over a long period. The protozoan starch could be isolated in about 1% yield by application of the Pucher *et al.* (1948) method direct to the dry matter of strained rumen liquor taken from sheep which had grazed on starch-free spring grass.

DAM, H. & CHRISTENSEN, F. (1952). **Alimentary production of gallstones in hamsters.**—*Acta path. microbiol. scand.* **30,** 236-242. [In English. Authors' summary copied *verbatim.*] **173**

Hamsters reared on a cholesterol-free and nearly fat-free diet from weaning developed gallstones of a high cholesterol content.

SLEN, S. B. & WHITING, F. (1952). **Wool production as affected by the level of protein in the ration of the mature ewe.**—*J. anim. Sci.* **11,** 156-165. **174**

By increasing the level of protein from a basal ration containing 7% to levels of 10 and 13%, significant increases were obtained in raw fleece weight. A 10% level of protein produced as much fleece as 13% protein. Fibre thickness and length were also increased by increasing the level of protein.

It was concluded that 0·23 lb. of digestible crude protein per head daily in the ration of mature breeding ewes is adequate for maximum clean wool production.—G. B. S. HEATH.

EL-SHAZLY, K. (1952). **Degradation of protein in the rumen of the sheep. I. Some volatile fatty acids, including branched-chain isomers, found *in vivo*. II. The action of rumen micro-organisms on amino-acids.**—*Biochem. J.* **51,** 640-647 & 647-653. [Author's summaries copied *verbatim.*] **175**

I. Using the gas-liquid partition chromatogram of James & Martin (1952) it was found that branched-chain lower fatty acids occur in the rumen of the sheep on a variety of diets. A significant proportion of the C_4 acids was *iso*butyric acid, and branched-chain isomers often made up the greater part of the C_5 acids. C_6 acids were present only in small amounts.

The concentrations of ammonia and of the various volatile fatty acids in the rumen were determined at different times after feeding. Increased ammonia concentration was correlated with increased concentrations of *iso*butyric acid and of the C_5 acids, which are therefore considered to arise from microbial attack on protein in the rumen.

II. The amino-acids of an acid hydrolysate of casein were attacked under anaerobic conditions at similar relative rates by sheep rumen contents and by washed suspensions of micro-organisms therefrom.

L-Proline was reduced when other amino-acids were present; the resulting δ-aminovaleric acid was isolated and characterized (cf. Stickland, 1934, 1935).

Using washed suspensions, the main reaction products from casein hydrolysate were ammonia, carbon dioxide and volatile fatty acids in roughly equimolecular proportions; there was no significant formation of hydrogen, methane or non-volatile organic acids. The volatile fatty acids were straight- and branched-chain C_2 to C_5 acids.

The power of washed suspensions of rumen micro-organisms to deaminate amino-acids depended on the diet of the animal.

The probable origin of the branched-chain acids by Stickland reactions from valine, leucine and isoleucine, and the nutritional significance of the deamination reactions for the animal are discussed.

SHEFFY, B. E., GRUMMER, R. H., PHILLIPS, P. H. & BOHSTEDT, G. (1952). **Comparison of growth responses of 2-day-old pigs to streptomycin, aureomycin, and crude APF, alone and in combination with B_{12}.**—*J. anim. Sci.* **11**, 97-102. [Authors 'summary modified.] **176**

A "semi-synthetic milk" (low in vitamin B_{12}) using vitamin-free casein as a source of protein was fed to 2-day-old piglets to demonstrate the growth-stimulating effects of vitamin B_{12}, streptomycin, aureomycin, and crude APF (animal protein factor).

A dietary requirement for vitamin B_{12} for piglets was suggested.

Supplementation with aureomycin alone, aureomycin plus vitamin B_{12}, streptomycin plus vitamin B_{12}, and a combination of aureomycin, streptomycin, and vitamin B_{12} increased the daily rate of gain over that of the piglets fed the control ration. No growth-promoting effect resulted from the supplementation of streptomycin alone or crude APF to the basal ration. Better growth was observed when streptomycin and vitamin B_{12} were fed together than when streptomycin was fed alone. This was not apparent with aureomycin. No consistent differences in the haemoglobin levels were apparent between the various lots.

KLEIBER, M. & EDICK, M. (1952). **A respiration apparatus for C^{14} studies with cows.**—*J. anim. Sci.* **11**, 61-71. [Abst. from authors' summary.] **177**

The authors described an apparatus which allows the simultaneous measurements of the metabolic rate and the radio-activity in the expired CO_2 of cows injected with C^{14} labelled compounds over a period of several hours. They illustrated the operation of the apparatus and the calculation of the results, as rate of Co_2 production and specific radio-activity of the expired CO_2, by a record of a trial with injection of sodium carbonate labelled with radio-active carbon.

KLOSTERMAN, E. W., DINUSSON, W. E., LIGHT, M. R. & BUCHANAN, M. L. (1951). **APF & stilbestrol. What is their value for growing and fattening lambs?**—*Bi-m. Bull. N. Dak. agric. Exp. Sta.* **14**, 43-45. [Abst. from authors' summary.] **178**

Vitamin B_{12} and aureomycin, added as APF [animal protein factor] at the rate of 2% of the grain mixture, brought about no increase in weight gain or saving of feed when fed to growing and fattening lambs.

An implantation of 12 mg. of stilboestrol stimulated the weight gains of lambs fed four different rations. Such use of stilboestrol, except for poultry, has not yet been approved by the U.S. federal food and drug administration.

BLIGHT, J. C., KING, J. X. & ELLIS, N. R. (1952). **Effect of vitamin B_{12} and aureomycin concentrates on the growth rate of unthrifty weanling pigs.**—*J. anim. Sci.* **11**, 92-96. [Authors' summary copied *verbatim.*] **179**

Weanling pigs of various degrees of unthriftiness were fed a well balanced diet supplemented with vitamin B_{12} and aureomycin concentrates. The addition of vitamin B_{12} to the diet of slow-growing unthrifty pigs did not significantly affect their gain. Similar pigs receiving aureomycin as supplement grew at a significantly faster rate and were more uniform in size and more thrifty in appearance. Based on differences in initial weight, the response to aureomycin can be attributed primarily to its effect on the lighter more unthrifty pigs. The factors contributing to the unthrifty condition of the pigs and the mode of action of the aureomycin were not apparent from this experiment.

SEWELL, R. F., CUNHA, T. J., SHAWVER, C. B., NEY, W. A. & WALLACE, H. D. (1952). **Effect of aureomycin on diarrhea and on the vitamin B_{12} and methionine needs of the pig.**—*Amer. J. vet. Res.* **13**, 186-187. [Authors' summary modified.] **180**

The inclusion of either vitamin B_{12} or

methionine in the diet increased the rate of gain with weanling pigs fed a maize-peanut meal ration. No further increase in rate of gain was observed when both supplements were included in the diet. Aureomycin supplementation of the basal ration was of considerable benefit. Pigs fed aureomycin plus vitamin B_{12} gained at a faster rate than when fed aureomycin alone, thus indicating that both are needed for maximum growth response. Aureomycin prevented a diarrhoea which occurred periodically in other pigs on experiment.

TERRILL, S. W., BECKER, D. E., ADAMS, C. R. & MEADE, R. J. (1952). **Response of growing-fattening pigs to bacitracin, aureomycin and other supplements.**—*J. anim. Sci.* **11,** 84-91. [Abst. from authors' summary.] **181**

The addition of 5 mg. aureomycin hydrochloride per lb. of a 20% crude protein "maize + solvent soya bean oil meal" ration fortified with minerals, vitamins A and D and riboflavin, pantothenic acid, niacin, choline and a vitamin B_{12} feed supplement fed to growing-fattening pigs in fattening pens from weaning to 100 lb. live weight resulted in a 27% increase in rate of gain. The addition of 5 mg. bacitracin to the same ration promoted a 16% increase in rate of gain. The response from pharmaceutical grade bacitracin and from bacitracin feed supplement when each furnished 5 mg. bacitracin per lb. of ration was essentially the same.

When vitamin B_{12} feed supplement which furnished approximately 7·5 μg. vitamin B_{12} per lb. of ration was omitted from the above ration the rate of gain was 15% slower, but the difference in gains was not statistically significant. The substitution of 3% condensed menhaden fish solubles for the vitamin B_{12} feed supplement in the basal ration plus an antibiotic (bacitracin) feed supplement did not significantly alter daily gains.

Fattening pigs weighing 100–200 lb. which had received no antibiotic supplementation from weaning to 100 lb. were subdivided into two groups; one group continued on the basal ration and the other received 5 mg. bacitracin per lb. of ration. Pigs which had previously received bacitracin from weaning to 100 lb. were similarly subdivided, one group continuing to receive bacitracin and the other being fed the basal ration. Under the conditions of this experiment best results were obtained when bacitracin was included in the ration for the entire period from weaning to 200 lb. live weight. Pigs which received bacitracin in the ration throughout the entire feeding period gained significantly faster than pigs receiving no bacitracin supplementation throughout.

HOEFER, J. A., LUECKE, R. W., THORP, F., JR. & JOHNSTON, R. L. (1952). **The effect of terramycin on the growth of pigs fed different levels of protein.**—*J. anim. Sci.* **11,** 455-458. [Authors' summary modified.] **182**

Eighty 25 lb. pigs were used to study the effect of terramycin on the growth of pigs fed different levels of protein. Terramycin at 5 mg. per lb. of total ration had a highly significant effect on rate of gain and also improved efficiency of gain. It did not seem to affect the requirement of the pigs for protein. The pigs receiving the 15% protein ration (reduced to 12% at 100 lb.) did just as well as the pigs receiving the 18% protein ration (reduced to 15% at 100 lb.).

It is suggested that present standards for protein for pigs may be higher than they need to be, and that the high level of B vitamins used in this study may be related to an increased efficiency of protein utilization.

ELAM, J. F., GEE, L. L. & COUCH, J. R. (1951). **Function and metabolic significance of penicillin and bacitracin in the chick.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 832-836. [Authors' summary modified.] **183**

The feeding of penicillin, but not of autoclaved penicillin, stimulated the growth of birds fed an all-vegetable protein diet. The injection similarly increased growth. Bacitracin when administered orally or parenterally increased the rate of growth. Under the conditions of the experiment the feeding of penicillin increased the penicillin and aureomycin resistant organisms and increased the yeast count. The parenteral administration of penicillin had no effect on the faecal microflora, neither did the oral or parenteral administration of bacitracin. Autoclaved penicillin given parenterally had little effect upon the faecal microflora.

Since the parenteral administration of antibiotics and autoclaved penicillin increased the rate of growth and yet had little effect on the faecal aerobic microflora count it seems possible that the antibiotics may have stimulated growth by some other mechanism. Thus, it might be surmised that the antibiotic molecule or a fragment of the same might act as a metabolite within the body of the bird.

FOY, H., KONDI, A., HARGREAVES, A. & LOWRY, J. (1952). **Response of megaloblastic anaemia in Africans to oral crystalline penicillin G.**—*Lancet.* **262,** 1221-1225. [Authors' summary copied *verbatim.*] **184**

The megaloblastic anaemias which respond to intramuscular penicillin also respond to oral penicillin. Alike with oral and with intramuscular penicillin, there seems to be an optimum dose above and below which no response can be obtained. In the cases investigated the optimum dose seemed to be 200,000 units daily for oral penicillin and 400,000 units daily for intramuscular. Penicillin probably produces its effect by changing the intestinal microflora. Large doses of penicillin destroy not only the competing flora but also the synthesising flora. It is suggested that a low-protein high-carbohydrate diet produces a microflora inimical to the synthesis and/or utilisation of haemopoietic factors. This may explain why the incidence of deficiency states related to vitamin-B complex are so common in Africa, India, and the Balkans.

WAHLSTROM, R. C., COHN, E. M., TERRILL, S. W. & JOHNSON, B. C. (1952). **Growth effect of various antibiotics on baby pigs fed synthetic rations.**—*J. anim. Sci.* **11,** 449-454. [Authors' summary modified.] **185**

Both aureomycin and chloromycetin stimulated the feed consumption and rate of gain of piglets fed an α-protein "synthetic milk" diet. Chloromycetin reduced the number of coliform bacteria present in the faeces during the first nine days of the experiment. This was only a temporary reduction, as by the 16th day no difference was apparent. Aureomycin had no effect on the faecal bacteria studied in these tests.

DINUSSON, W. E., KLOSTERMAN, E. W., LASLEY, E. L., HOLM, G. C. & BUCHANAN, M. L. (1951). **Cobalt, B_{12} (APF), and meat scraps for growing-fattening swine.**—*Bi-m. Bull. N.Dak. agric. Exp. Sta.* **13,** 146-149. [Authors' summary modified.] **186**

Additions of small amounts of cobalt (about 885 μg. per lb. of feed) as cobalt chloride or cobalt carbonate, to rations of locally grown grains increased the rate of gain of growing-fattening pigs by 0·1 to 0·2 lb. per day.

Additions of vitamin B_{12} to simple all-plant rations, such as maize, soya bean oil meal, and minerals for swine significantly increased the rate of gain.

Additions of 15 mg. of streptomycin per lb. of feed did not significantly increase gains of swine which were healthy and maintained under strict sanitation.

ELY, C. M. & SCHOTT, S. (1952). **Surface active agents as growth stimulators in chick rations.**—*World's Poult. Sci. J.* **8,** 133-144. **187**

This report summarises the results of preliminary investigations on the application of surface active agents in nutrition. Of a large number of agents examined four types:—alkyl aryl sulphonate, sodium ethylene diamine tetra-acetic acid, the quarternary ammonium compounds and the alkyl polyethylene oxides, had the best growth stimulating effect. The authors discussed possible modes of action.—D. LUKE.

CRASEMANN, E. (1952). Mineralstoffhaushalt und Mineralstoffversorgung der landwirtschaftlichen Nutztiere. **[Minerals for domestic animals.]**—*Schweiz. Arch. Tierheilk.* **94,** 445-461. [English, French and Italian summaries.] **188**

An account of essential elements, the animal's reactions to deficiencies thereof, and the mineral content of diets.—ROY MACK.

SPEER, V. C., CATRON, D. V., HOMEYER, P. G. & CULBERTSON, C. C. (1952). **Trace minerals for growing-fattening swine fed in drylot.**—*J. anim. Sci.* **11,** 112-117. [Abst. from authors' summary.] **189**

The results of this experiment would indicate that swine rations composed of commonly used natural feedstuffs may be slightly deficient in one or more of the trace elements studied in this experiment if maximum growth is desired.

ELLINGER, G. M., DUCKWORTH, J., DALGARNO, A. C. & QUENOUILLE, M. H. (1952). **Skeletal changes during pregnancy and lactation in the rat: effect of different levels of dietary calcium.** — *Brit. J. Nutr.* **6,** 235-253. [Authors' summary copied *verbatim.*] **190**

Bone growth and bone erosion in rats fed on diets of different calcium content during gestation and lactation have been studied.

During lactation erosion occurred irrespective of the level of calcium intake. Erosion was confined principally to regions rich in cancellous bone, but resorption of the shaft bone at the surface of the medullary cavity was found in all regions. There was no evidence of selective solution of bone mineral independent of erosion.

In a comparison between chemical and physical methods of bone examination, certain physical measurements provided as accurate a means of discriminating between the effect of diets of different calcium content as chemical methods.

The weights of liver, kidneys, adrenals and thyroid were not affected by differences in the calcium content of diets. At the end of the first gestation ovaries from severely calcium-deficient rats were considerably heavier than ovaries from adequately fed rats. The spleens

of rats with lower calcium intakes showed a weight gain during gestation which disappeared during the subsequent lactation.

Fertility of the dam and mothering instinct were not impaired, even in severe calcium deficiency. The weight of the young at birth and the number of young in a litter were not affected by the level of calcium intake by the dam. Weaning weights of young from severely deficient dams were lower.

SEEKLES, L. (1951). **Increased activity of calcium ions as a factor of instability of milk.** —*Proc. XI Cong. pure appl. Chem.* 3, 263-270. [Abst. from author's summary.] **191**

A condition of instability of milk at normal pH called "the Utrecht abnormality" is probably due to increased activity of the calcium ions. Normal milk can be made unstable by of either penicillin or autoclaved penicillin streptomycin was fed alone. This was not apadding calcium chloride. When the pH is increased the instability decreases. Stabilisation without altering the pH could be effected by adding substances which cause a decrease in the activity of the calcium ions, *e.g.* sodium citrate, a mixture of monopotassium and disodium phosphates, potassium oxalate, and sodium fluoride.

Different conditions in cattle, causing a disturbance of the mineral balance, may provoke instability of milk. Thus a high concentrate diet, the feeding of calcium salts, and malnutrition may be considered to be remote causes of this kind of instability of milk.

Oral or subcutaneous adminstration of sodium citrate to cows producing abnormal milk was shown to be successful in several cases.

The instability may be easily corrected by adding to the milk some sodium citrate which is a normal constituent of milk. Milk treated in this way will not exceed the normal limits of variation with respect to chemical constitution and may be used for technical and domestic purposes.

PHILLIPSON, A. T. & MITCHELL, R. L. (1952). **The administration of cobalt by different routes to lambs maintained on a low-cobalt diet.**—*Brit. J. Nutr.* 6, 176-189. [Authors' summary slightly modified.] **192**

Cobalt deficiency in lambs has been maintained or produced by feeding a cobalt-low ration. Administration of cobalt intravenously or into the duodenum at the rate of 0·1 mg. daily did not cure the deficient lamb. Administration of cobalt into the duodenum or abomasum in quantities greater than 0·1 mg. allowed growth to occur at a rate similar to that of lambs receiving 0·1 mg. cobalt daily by mouth. A higher concentration of cobalt was found in the rumen of lambs receiving cobalt into the abomasum or duodenum than in those receiving no cobalt. The concentration of cobalt in the liver was substantially increased by the administration of cobalt intravenously, into the duodenum or by mouth, but there was no correlation between liver cobalt and signs of deficiency. The weight changes of cobalt-deficient lambs were closely related to the quantity of food consumed.

Since this paper was sent to press a report from America [Smith *et al.* (*V.B.* 22, 2170)] has appeared to the effect that very large doses of vitamin B_{12} given by injection allow practically normal growth rates in cobalt-deficient lambs. Vitamin B_{12b} seems to be as effective as vitamin B_{12} itself.

PEROLD, I. S. (1952). **Micro-element deficiencies. Feeding tests with sheep and dairy cows.** [Copper.]—*Fmg. S. Afr.* 27, 40, 60 & 67. **193**

In copper-deficient areas of Cape Province swayback in sheep has been eliminated experimentally by dietary copper supplementation. Similarly dairy farming became economic in otherwise highly unfavourable districts.

—P. H. HERBERT.

BAXTER, J. H. (1951). **Bone disorder in copper-deficient puppies.**—*Amer. J. Physiol.* 167, 766. [Only abst. given. Abst. modified.] **194**

Puppies (5 to 6 weeks old) were placed on a purified diet containing approximately 1μg. of copper per g. of (dry) food, and demineralized water. After 1 to 2 months, about two-thirds of the animals developed lameness accompanied by severe anaemia, graying and poor condition of the hair, thickening and scaling of the skin, and sometimes poor growth. Litter-mates on the same diet with added copper (10 μg. per g.) remained entirely normal. The lameness was caused in part by bowing of the bones of the front legs, and by joints which were large, knotty and unstable. Excessive bending (dorsiflexion) of the wrists was prominent. Spontaneous fractures and dislocation of the epiphyses occurred frequently in the legs. Wasting of limb muscles and sometimes pain on movement accompanied the bone changes. X-rays of the bones of the extremities showed very thin cortices, wide marrow cavities, absence of trabeculae, fractures and Milkman-Looser zones. In some cases there was slight widening of the epiphyseal junctions. Plasma copper levels in deficient animals were 20–30 μg.%, compared with control levels of about 100 μg.%. Determinations of plasma calcium,

inorganic phosphorus, alkaline phosphatase, CO_2, pH and potassium showed no consistent differences between deficient and control animals. Autopsy examinations revealed no impressive abnormalities in the gross in organs other than the bones. Detailed morphological studies are being carried out. Administration of copper to the deficient animals was followed by a prompt regression of the abnormal findings.

HEMMELER, G. (1951). Métabolisme du fer. Physiologie—pathologie—traitement. **[Iron metabolism. Physiology—pathology—treatment.]** pp. 257. Paris: Masson & Cie. Fr. 1500. **195**

Although this book contains exhaustive information under the above headings within subheadings and numbered paragraphs, and has a detailed table of contents, this does not make up for the absence of an index. Thus, though of considerable value to the strict specialist on the subject, its usefulness as a work of reference to the general reader or specialist in allied fields, is reduced. The material is copiously documented and contains many figures and tables, and case histories are included in the sections devoted to pathology and treatment. Both to the physiologist and to the clinician this book should prove to be a valuable pool of information and guide to the relevant literature.

—R. MARSHALL.

O'DONOVAN, J. & SHEEHY, E. J. (1950). **Meeting the needs of young cattle in the phosphate deficient areas of County Offaly.**—*J. Dep. Agric., Eire.* **47,** 34-53. **196**

Manuring pasture with superphosphates or feeding bone-meal supplements improved weight and condition of animals. Less marked gains occurred when protein supplements were given, but the effect of protein and phosphate supplements together was most striking. Oestrus occurred earlier in this group than in controls.

—P. H. HERBERT.

HENTGES, J. F., JR., GRUMMER, R. H., PHILLIPS, P. H. & BOHSTEDT, G. (1952). **The minimum requirement of young pigs for a purified source of carotene.**—*J. Anim. Sci.* **11,** 266-272. [Authors' summary modified.] **197**

The authors reported the minimum requirements of young pigs, which were depleted of their vitamin A reserves, for purified carotene (80–85% β-carotene) in cottonseed oil. Criteria used were blood plasma and liver concentrations of vitamin A, cerebrospinal fluid pressures, night blindness, and rates of gain.

To restore initial blood plasma vitamin A levels and provide some liver storage of vitamin A, 25 μg. of purified carotene per kg. body weight was shown to be the minimum daily requirement. The feeding of 17·5 μg. per kg. body weight daily did not permit liver storage of vitamin A but was sufficient to restore initial plasma vitamin A levels under the environmental conditions of experiment 2.

Ten μg. of purified carotene per kg. body weight daily was sufficient to overcome gross deficiency symptoms and to promote good average daily weight gains.

LIGHT, M. R., KLOSTERMAN, E. W., BUCHANAN, M. L. & BOLIN, D. W. (1952). **The effect of nutrition upon wool pigmentation.**—*J. anim. Sci.* **11,** 599-604. [Authors' summary modified.] **198**

A reversal of wool pigmentation from black to white and *vice versa* has occurred in Hampshire sheep fed rations low in vitamins A and D. Vitamin A treatments to depleted sheep of Hampshire origin brought no response in pigmentation pattern. A reversion to original wool pigmentation was noted when vitamin D was administered to lambs previously treated with vitamin A.

Sheep of Delaine-Merino × Rambouillet ancestry or Columbia-type sheep that were heterozygous for black showed no pigmentation reversal pattern.

There was a difference between Hampshire lambs in their response to rations deficient in vitamins A and D.

HERRICK, E. H., EIDE, I. M. & SNOW, M. R. (1952). **Vitamin E in pituitary gland function of fowls.**—*Proc. Soc. exp. Biol., N.Y.* **79,** 441-444. [Authors' summary slightly modified.] **199**

The testes of male chickens kept on a diet deficient in vitamin E for two months were much reduced in size, and the seminiferous tubules showed considerable degeneration. The combs, likewise, were smaller in the group deprived of vitamin E. The assays of pituitary glands revealed that more gonad stimulating substance was produced by those of fowls which had received vitamin E in their diet. The pituitary glands from the birds on the vitamin E-deficient diet had approximately one-half as many active basophilic cells as those from the birds supplied with vitamin E.

CHRISTIAN, A B. (1952). **Prophylactic use of normal bovine serum solids plus vitamin K in calf diarrhea.**—*Cornell Vet.* **42,** 16-21. **200**

149 new-born calves, fed vitamin K,

bovine serum solids and digested milk solids were raised without loss. Of 84 calves fed colostrum only, one died.—JOHN SEAMER.

CARTWRIGHT, G. E. & WINTROBE, M. M. (1951). **Experimental production of nutritional macrocytic anemia in swine.**—*Amer. J. Physiol.* **167,** 773-774. [Only abst. given. Abst. modified.] **201**

A severe macrocytic anaemia, leucopenia and slight thrombocytopenia were produced in 56 swine made deficient in pteroylglutamic acid. The bone marrow of such animals was hyperplastic and there was an increase in large immature nucleated red cells (macronormoblasts) of a type which resembled but which were not identical with the megaloblasts of pernicious anaemia. The haematological manifestations of this deficiency appeared in the presence of 'extrinsic factor' in the diet and were not prevented or alleviated by the administration of purified liver extract or crystalline vitamin B_{12}. In an effort to produce a deficiency of vitamin B_{12} a total of 70 pigs were fed a purified diet containing soya bean alpha protein in place of casein. Growth of the animals on the above diets without added vitamin B_{12} was retarded as compared with the growth of animals on the same diet supplemented with this vitamin. Anaemia was not a prominent feature of the deficiency syndrome and when present was usually mild in degree and normocytic in type. Abnormalities in the nucleated red cells in the sternal marrow were not present. A combined deficiency of both pteroylglutamic acid and vitamin B_{12} was produced in 21 pigs. These animals developed a severe macrocytic anaemia, leucopenia and slight thrombocytopenia. Pernicious anaemia-like megaloblasts were observed in small numbers in the bone marrow. The majority of the nucleated red cells were macronormoblasts. The anaemia responded partially to crystalline vitamin B_{12} and completely to pteroylglutamic acid. The authors discussed the role of pteroylglutamic acid and vitamin B_{12} in normal erythropoiesis.

LUECKE, R. W., HOEFER, J. A. & THORP, F., JR. (1952). **The relationship of protein to pantothenic acid and vitamin B_{12} in the growing pig.** — *J. Anim. Sci.* **11,** 238-243. [Authors' summary modified.] **202**

Symptoms of pantothenic acid deficiency were produced in pigs fed a low protein (14%) ration containing corn, soya bean oil meal, fish solubles and minerals. The addition of calcium pantothenate at a level of 4 mg. per lb. of feed resulted in a very marked growth response. The addition of calcium pantothenate to a higher protein (17·8%) ration, made up of the same feed constituents and containing the same level of pantothenic acid, resulted in only a slight increase in growth which was not statistically significant. The addition of vitamin B_{12} to both basal rations did not result in any significant growth response.

The data seem to indicate that higher levels of protein exert a sparing effect on the pantothenic acid requirement of the pig.

DRAPER, H. H., SIME, J. T. & JOHNSON, B. C. (1952). **A study of vitamin B_{12} deficiency in the calf.**—*J. Anim. Sci* **11,** 332-340. [Authors' summary slightly modified.] **203**

A series of calves maintained on a "synthetic milk" diet in which the protein source was α-protein from soya beans, supplemented with methionine, lard, cerelose, minerals, and vitamins other than vitamin B_{12}, exhibited a cessation of growth, poor appetite, and, in some cases, incoordination. Examination of the peripheral nerves of some of these calves revealed varying degrees of demyelination, and the distribution of bone marrow cells showed a low proportion of the myeloid series.

In some animals growth was resumed following liver extract or crystalline vitamin B_{12} therapy, and a reticulocytosis was observed in the bone marrow. Other animals gave only transient responses to vitamin B_{12} therapy, intramuscular or oral, and still others failed to show any response at all. Biliary obstruction was observed in four calves and was suspected in at least two others. The fact that good growth was previously induced in calves fed a diet differing only in that casein replaced α-protein plus methionine indicates that casein may have been supplying one or more factors in addition to vitamin B_{12} which are required for the normal development of the calf.

WOLBACH, S. B. & MADDOCK, C. L. (1952). **Cortisone and matrix formation in experimental scorbutus and repair therefrom, with contributions to the pathology of experimental scorbutus.** — *Arch. Path.* **53,** 54-69. [Authors' summary modified.] **204**

The epiphyseal cartilage of long bones of g. pigs when observed during active growth is a favourable tissue for the study of the effect of ascorbic acid deficiency on matrix formation and for the study of the sequences of matrix formation in repair after therapy. The internal callus of long bones resulting from fracture in scorbutic g. pigs is unable to form bone matrix until ascorbic acid is restored to the diet.

Cortisone administered in prophylaxis or

therapeutically after the development of scurvy does not modify the progress of events, discernible by gross and histological study, caused by ascorbic acid deficiency.

Cortisone administration neither accelerates nor depresses the reparative processes in scurvy in the g. pig. The resumption of formation of intracellular materials is not affected in either direction as far as can be observed by histological criteria.

Observations on the adrenal glands suggested that their response to ascorbic acid deficiency is not peculiar to this condition, nor was it materially modified by cortisone administered in the scorbutic state or during repair.

HOLMES, J. R. (1952). **Carbohydrate metabolism in the bovine. III. The effect of the administration of glucose by mouth to normal cattle of various ages.**—*J. comp. Path.* **62,** 41-53. [Author's summary copied *verbatim.*] **205**

The young ruminant, at least up to 12 months of age, differs from the mature animal in its response to glucose administered by mouth, in that a much greater rise in blood sugar occurs than in the adult. The administration of glucose to the adult animal in doses of 2·24 to 8·94 g./kg. resulted in the development of a temporary acetonuria after an interval of 1 to 5 hours: this did not occur in the young animal. Following the glucose administration there was a marked fall in rumen *p*H.

No acetone could be detected in the rumen contents collected after glucose administration and during the period of acetonuria.

It is considered that these results indicate that in the mature ruminant glucose undergoes rapid fermentation to volatile lower fatty acids which are absorbed by the portal vein and normally undergo conversion to ketones within the liver prior to metabolism through the tricarboxylic acid cycle. When a sudden excess of these acids enters the liver ketones accumulate and are excreted in the urine. Hence the suggestion is advanced that the rumen is indirectly the source of the acetonuria due to the fermentation mechanisms and that the actual site of ketone production is probably the liver.

Whilst in the single-stomached animal glucose is antiketogenic when given by mouth, it appears that in the bovine, owing to its fermentation to volatile fatty acids, it may be ketogenic. This suggests that the treatment of ketosis with large doses of glucose may be contraindicated.

On account of the absence of any marked rise in blood sugar the oral administration of glucose will not provide a satisfactory hepatic function test in the bovine.

ANSELL, G. & MILLER, H. (1952). **Influence of iodine on the release of thyroid hormone in thyrotoxicosis.**—*Lancet.* **263,** 5-10. [Authors' summary copied *verbatim.*] **206**

Tracer experiments using radio-active iodine (I^{131}) were made in duplicate on three groups of thyrotoxic patients. One group was given no drugs and was used as a check on the reproducibility of the results. A second group was given methylthiouracil, and the third group sodium iodide, during the second tracer experiment. The drugs were administered in each case after the peak uptake of the radioiodine in the gland had been passed.

The rate of fall of the gland radioactivity was much increased by the administration of methylthiouracil but was unaffected by sodium iodide. At the same time the radioactivity in the plasma was substantially lower after iodide had been given than after methylthiouracil. The urine output of radioactive iodine was increased by both drugs.

It is suggested that high plasma-iodide levels, besides blocking the organic binding of I^{131} in the gland, an action similar to that of methylthiouracil, also slow down the release from the gland of preformed radioactive thyroid hormone. This probably indicates a real reduction in hormone output from the gland, though a complete interpretation of the results is not possible without a knowledge of the specific activities of the iodine compounds present in the cycle.

ROSE, S. (1951). **The rôle of the adrenal cortex in diabetic ketosis.**—*Aust. J. exp. Biol. med. Sci.* **29,** 469-475. [Author's summary copied *verbatim.*] **207**

There is a moderate increase in adrenocortical activity in insulin controlled alloxan diabetic rats. There is a very marked increase in adrenocortical activity in uncontrolled alloxan diabetic ketotic rats. The insulin resistance and aggravation of diabetes which occur during ketosis are probably related to the increased adrenocortical activity and consequent overproduction of 11, 17 oxysteroids. The validity of this causal relationship has been discussed.

SCHULTZ, L. H. & SMITH, V. R. (1951). **Experimental alteration of the sugar and ketone levels of the blood of ruminants in relation to ketosis.**—*J. Dairy Sci.* **34,** 1191-1199. [Authors' summary copied *verbatim.*] **208**

A study was made of the interrelation of

the sugar and ketone levels of the blood of ruminants by means of experimental alteration of each of these substances. Under the conditions of these experiments, it was not possible to produce conditions similar to field ketosis by alteration of blood sugar levels. Alloxan injection produced a typical diabetic condition, with high levels of both blood sugar and ketones. By means of insulin injections it was possible to maintain the blood sugar at low levels for periods of several days, but in no case was there any increase in blood ketones. Alteration of blood ketones by the administration of ketogenic fatty acids produced temporary changes in blood composition resembling ketosis. Blood ketones were high and blood sugar was low. Non-ketogenic fatty acids did not cause these changes. The administration of the ketone bodies themselves likewise caused no depression of blood sugar.

PUNTRIANO, G. (1952). **Urinary glucocorticoids as an indication of adrenal dysfunction in ketosis of dairy cattle.**—*Amer. J. vet. Res.* **13**, 129-131. [Author's summary copied *verbatim.*] **209**

A biological assay of urinary glucocorticoids, as an indirect method of determining the level of corticoadrenal activity in normal lactating, pregnant, and acetonemic cows, was made. Pregnant cows showed an increase and acetonemic cows showed a decrease of corticoadrenal activity, as compared to that of normal lactating cows in this preliminary experiment.

SCHULTZ, L. H. (1952). **Treatment of ketosis in dairy cattle with sodium propionate.**—*Cornell Vet.* **42**, 148-155. [Abst. from author's summary.] **210**

In all of 19 cows with ketosis ranging in degree from mild to severe, treated *per os* with 2–8 oz. sodium propionate daily, there was increase in milk production and improvement of appetite. At the end of ten days or less of treatment blood sugar values were normal in all cows and blood ketones had returned to normal in all but three cases.

S. considered that the use of sodium propionate may prove helpful in the control of ketosis, but that because some of the cases were mild and because there is a certain amount of spontaneous recovery, these results should be interpreted conservatively.

DISEASES, GENERAL

HINSHAW, W. R., ROSENWALD, A. S. & RUBO, M. [Edited by.] (1951). **Turkey diseases.** pp. viii + 108. (paging in sections). Berkeley, California: Agric. Exp. Sta. Ext. Serv. Manual 3. $1.00. **211**

This little manual is an excellent example of how information on diseases of livestock should be presented to farmers. It is liberally illustrated with photographs which clearly demonstrate the points made in the text. The bacterial, protozoan, virus, fungal, non-infecious and parasitic diseases of the turkey are covered and there is a good index.—M.C.

GILMAN, A. R. (1952). **A modified cephalin-cholesterol flocculation test for horse serums.** —*Amer. J. vet. Res.* **13**, 191-194. [Abst from author's summary.] **212**

G. described a modification of the cephalin-cholesterol flocculation test applicable to horse sera. In a series of 135 presumably normal horses, 98·4% were negative to this flocculation test when run as recommended. The mechanism of the positive reaction is such that it can be expected in primary hepatic impairment and/or in conditions in which the reticulo-endothelial system is involved without hepatic impairment. It was fairly consistently demonstrated in a group of horses experimentally infected with equine infectious anaemia. It was emphasized that the test should be used only as an aid in the diagnosis of liver and reticulo-endothelial system disturbance, and that it is not pathognomonic for any particular disease.

EDGSON, F. A. (1952). **Bovine lipomatosis.**—*Vet. Rec.* **64**, 449-454. [Author's summary modified.] **213**

Seven cases of bovine lipomatosis in attested Guernsey or Guernsey cross-bred cows were described. The breed incidence and possible aetiology were discussed briefly. The relationships of the condition to health and fertility were detailed and main points of differential diagnosis listed.

LAMBERT, N. H. & PARKHILL, M. E. (1952). **Chloromycetin in the treatment of ear canker in dogs.**—*Irish vet. J.* **6**, 382-384. [Abst. from authors' summary.] **214**

A note on the treatment with chloromycetin of ear canker in dogs. The results were considered to be good.

GORNALL, A. G. & BARDAWILL, C. J. (1952). **The study of liver function in dogs.**—*Canad. J. med. Sci.* **30**, 256-271. [Authors' abst. modified.] **215**

Three years' experience with the study of

liver function in dogs given carbon tetrachloride has led to the following conclusions. The most generally useful test of disturbed liver function has been a modified bromsulphalein excretion test in which a dose of 10 mg. per kg. is used and the blood sampled 15 min. later. The serum "alkaline" phosphatase level, in the absence of extrahepatic biliary obstruction, is a sensitive index of liver damage in dogs. The albumin/euglobulin ratio decreases during hepatotoxin administration and usually remains low for a time during hepatic regeneration. The degree of lowering gives a useful indication of the clinical condition of the animal and correlates best with the histological findings. Serum bilirubin was an insensitive indication of liver damage and urinary bilirubin and urobilinogen studies were of no value under the experimental conditions. The plasma prothrombin time was increased only in the early acute phase of liver injury. Certain empirical tests for altered serum proteins, thymol turbidity, zinc sulphate, and 13½% sodium sulphite can be applied to dogs but are much less sensitive than they are in man. Amino-acid tolerance tests gave little evidence of being useful and the intravenous galactose tolerance test was of no value in dogs.

McKee, F. W., Yuile, C. L., Lamson, B. G. & Whipple, G. H. (1952). **Albumin and globulin circulation in experimental ascites. Relative rates of interchange between plasma and ascitic fluid studied with C^{14} labelled proteins.**—*J. exp. Med.* **95,** 161-172. [Authors' summary modified.] 216

Plasma containing carbon^{14}-labelled albumin and globulin, obtained by feeding ϵ-C^{14}D,L-lysine to a donor dog, was injected intravenously and intraperitoneally into recipient dogs with experimental ascites.

The circulation and interchange of total plasma protein between circulating blood and ascitic fluid were confirmed and the participation of both albumin and globulin in this interchange was demonstrated.

Labelled albumin tends to reach equilibrium in plasma and ascitic fluid in a shorter period of time (1 to 2 days) than does globulin (2 or more days), after administration of labelled plasma by either route.

Evidence was presented that the rate of transfer of albumin across the peritoneal membrane is at least three times faster than that of globulin in terms of weight.

Causey, G. & Palmer, E. (1952). **Early changes in degenerating mammalian nerves.** —*Proc. R. Soc.* Ser. B. **139,** 597-609. [Authors' summary copied *verbatim.*] 217

When a peripheral nerve is crushed with forceps the myelin and axoplasm are displaced along the nerve and behave as liquids. The direction of this displacement can be controlled by obstructing the flow in one or the other direction. After the pressure on the nerve has been released there is a return flow of myelin and axoplasm, refilling the crushed region.

The displaced axoplasm and myelin become mixed. During the return flow they again separate to give the appearance of normal fibres, before they undergo Wallerian degeneration.

Between 24 and 48 hours after the crush there are changes in the distribution of the myelin at the nodes. The ends of the nerve fibres proximal to the crushed point, that is, in continuity with the nerve cell body, become larger than those at the distal ends.

Wiggers, C. J. [Professor of Physiology and Director, Department of Physiology, School of Medicine, Western Reserve University.] (1950). **Physiology of shock.** pp. xix + 459. New York: The Commonwealth Fund. Cambridge, Mass.: Harvard University Press; London: Oxford University Press. 32s. 6d. 218

The problem of shock has been the subject of much speculation largely because there appear to be no pathognomonic signs of impending shock and even today, a full understanding of the mechanisms involved is lacking. This book is therefore to be welcomed for it throws new light on an extremely complex problem. The author and his co-workers at the Western Reserve University concerned themselves with experimental observations on the state of the peripheral circulation during shock and it is these studies which form the main theme of the book, but in presenting them the author has widened the scope of his subject by referring to the known general facts relating to shock.

After giving a concise account of the historical background and the clinical aspects of shock, the experimental production of shock is considered. Here much controversy has always been in evidence largely because no standardized method for the production of experimental shock has been used. Since after haemorrhage or various types of trauma, a considerable reduction in blood volume is the initial step in the development of shock, the author has standardized a method of producing haemorrhagic shock in dogs by bleeding from the femoral artery, the irreversible hypotension characteristic of shock being constantly produced by this means.

Consideration is next given to the methods and instruments employed in the study of the haemodynamics of shock and the results observed are discussed. It is concluded that a steady reduction in the volume of blood returned to the heart plays a dominant part in the progressive circulatory failure which will not respond or at best only shows a temporary response, to blood transfusions and still occurs even when a normal blood volume is maintained for a considerable period. The failure is due to a combination of factors, particularly a pooling and stagnation of blood in the minute vessels from loss of vasomotor tone; capillary anoxia and dilatation; and failure of the venopressor mechanism. In addition, a study of the heart in shock suggests that a myocardial depression directly contributes to the circulatory failure. Increased capillary permeability does not appear to be an important factor. Finally, oxidative functions, metabolic disturbances, toxaemic and neurogenic factors and the involvement of special organs in shock are considered.

It must be admitted that although no complete answer to the question as to what causes the irreversible circulatory failure in shock is as yet forthcoming, this book is a valuable contribution to the problem.—J. A. Nicholson.

Selye, H. [Professor and Director of the Institut de Médecine et de Chirurgie expérimentales, Université de Montréal.] (1951). **Annual report on stress.** pp. xxii + 511 + 133. R. Montreal: Acta, Inc. $10.00. 219

This is the first part of what is intended to be a series of reports dealing with recent literature on all aspects of the stress syndrome. At first sight it might seem to be more a collection of abstracts rather than a book, but as the author himself explains it is not only a guide to the very voluminous literature but an assessment of it.

It is a monument of industry and covers such a wide field that the task of assessment is more than usually difficult. Physiologists, biochemists, pathologists and many other specialists will all find something of interest in it.

—M.C.

Usteri, C. & Hedinger, C. (1951). Ueber die "Maladie des griffes de chat." **[Cat-scratch fever]**—*Schweiz. med. Wschr.* **81,** 221-223. 220

A report on cat-scratch fever in a woman.

—W. R. Bett.

POISONS AND POISONING

Muth, O. H. (1952). **Chronic copper poisoning in sheep.**—*J. Amer. vet. med. Ass.* **120,** 148-149. [Author's summary modified.] 221

Losses of 19 of a flock of 104 ewes were reported following pasturing on Ladino clover grown in an orchard sprayed with bordeaux mixture. Subsequent analysis of the clover revealed the copper content to be 42 p.p.m. Attention was called to the danger of the poisoning of sheep by copper from several sources.

Dunn, K. M., Ely, R. E. & Huffman, C. F. (1952). **Alleviation of cobalt toxicity in calves by methionine administration.**—*J. Anim. Sci.* **11,** 326-331. [Authors' summary modified.] 222

Calves were able to tolerate intravenous injections of small doses of cobalt without symptoms of toxicity. Larger doses of cobalt sulphate (0·3 mg. of cobalt per lb. body weight or more) caused symptoms of toxicity such as lachrymation, salivation, dyspnoea, incoordination, defaecation and urination. The injection of methionine previous to the injection of cobalt prevented or markedly reduced the severity of these symptoms. The lethal dose of cobalt injected intravenously is more than 4 mg. per lb. body weight for the dairy calf.

Rand, W. E. & Schmidt, H. J. (1952). **The effect upon cattle of Arizona waters of high fluoride content.**—*Amer. J. vet. Res.* **13,** 50-61. [Abst. from authors' summary.] 223

The results of studies of cattle that had been continually ingesting and absorbing fluoride from drinking water and from forage agreed with those reported by others.

Levels of soluble fluoride in the diet can be tolerated as high as 1 mg. per kg. body weight over periods as long as from 5–10 years, with no detectable effect except possibly slight mottling and slight wear of the incisor teeth. A level of soluble fluoride in the diet of the order of 2 mg. per kg. body weight per day may result in mottling and severe wear of incisor teeth and lameness, stiffness, emaciation, and general unthriftiness.

The authors concluded that the fluorine content of urine must be well above 10 p.p.m. to cause damage and that a fluorine content of

the metacarpus must be above 4,000 p.p.m. to indicate an accumulated amount that would have any effect other than some slight mottling or wear of the incisor teeth.

Briggs, G. M. & Phillips, P. H. (1952). **Development of fluorine toxicosis in the rabbit.**—*Proc. Soc, exp. Biol., N.Y.* **80,** 30-33. [Authors' summary and conclusions modified.] 224

The authors reported a study of growing rabbits fed a complete diet supplemented with various levels and forms of fluorine. When levels of fluorine above 0·021% were included in the ration, rabbits developed in four months a symptomatology indicating the development of fluorine toxicosis. Growth was retarded, stiffness of the joints occurred, and pronounced changes in the teeth and structure of the bone were encountered. Fluorine was concentrated in the skeleton, and it appears from these data that the rabbit can withstand a storage of fluorine up to about 5,000 p.p.m. without affecting such physiological processes as growth, health, normal teeth, and bone. In this species the fluorine of raw rock phosphate produced as toxic results, or more so, as an equivalent level of sodium fluoride borne fluorine.

Marsh, H., Johnson, L. H., Clark, R. S. & Pepper, J. H. (1951). **Toxicity to cattle of chlordane and toxaphene grasshopper baits.** —*Tech. Bull. Mo. St. Coll. agric. Exp. Sta.* No. 477. pp. 11. [Abst. from authors' summary.] 225

Seventeen heifers and young cows weighing 500–800 lb. were fed varying amounts of bran grasshopper baits containing toxaphene and chlordane. Cattle may develop toxic symptoms as a result of eating 4–10 lb. of bran containing 0·68% toxaphene, and more than 10 lb. will cause fatal poisoning. Other data were given concerning toxic and subtoxic doses.

Pankaskie, J. E., Fountaine, F. C. & Dahm, P. A. (1952). **The degradation and detoxication of parathion in dairy cows.**—*J. econ. Ent.* **45,** 51-60. [Authors' summary and conclusions modified.] 226

Parathion, in the form of an excessively heavy experimental residue of approximately 14 p.p.m. on baled alfalfa hay, was fed over a 61-day period to five dairy cows in mid-lactation and representing four of the major breeds. The average parathion intake for all cows during the experimental period was 166·9 mg. of parathion per cow per day or 0·33 mg. per kg. body weight per day. Neither parathion nor free *p*-nitrophenol, a probable hydrolytic product of parathion, was ever found in the milk or jugular blood of these experimental animals. The feeding of parathion as a forage residue at this rate had no adverse effects on the milk production, weight, and general health of the cows.

The degradation and detoxication of parathion was studied further in a second series of experiments in which parathion, as a commercial wettable powder, was fed in capsules at increasing rates of from one to 32 mg. of parathion per kg. body weight per day. No parathion, free *p*-nitrophenol, or free *p*-aminophenol was ever found in samples of jugular blood, urine, and milk taken during the experimental period. Experimental evidence indicates that the parathion must be hydrolyzed *in vivo* to *p*-nitrophenol, reduced to *p*-aminophenol, conjugated with glucuronic acid to an appreciable extent and then excreted in the urine as *p*-aminophenylglucuronide. The fate of the thiophosphoric acid portion of the parathion molecule was not determined.

Ashdown, D., Dahms, R. G., Ridgway, W. O. & Stiles, C. F. (1952). **Hazards in the use of parathion for greenbug control.**—*J. econ. Ent.* **45,** 82-84. 227

A dog which persisted in chasing a plane used to apply parathion spray died following a day of such activity. It was observed to be in the direct path of the spray on several occasions and ran through grain fields as applications were being made.

On several occasions, livestock inadvertently gained access to fields very soon after they were sprayed. On only one occasion did a death result, and in most cases, no poisoning symptoms were discernible. The cow which died was one of several which had been on dry feed, but grazed in a field three days after the insecticidal application had been made. Two other cattle of the many exposed became ill and recovered. It is suggested that the sudden change from dry to green feed may have induced a greater intake of material, and possibly complicated the poisoning; in several other somewhat comparable cases, no poisoning symptoms were noted in cattle and horses feeding accidentally on recently sprayed wheat plants.

No rabbits or birds were found dead or affected, although a considerable effort was directed toward determining possible deleterious effects on wildlife of the extensive parathion applications.

Draper, C. I., Harris, J. R., Greenwood, D. A., Biddulph, C., Harris, L. E., Mangelson, F., Binns, W. & Miner, M. L.

(1952). **The transfer of DDT from the feed to eggs and body tissues of White Leghorn hens.** —*Poult. Sci.* **31,** 388-393. 228

Alfalfa crops were dusted with varying amounts of D.D.T., the hay was harvested and ground to a meal which was added to poultry feed at the rate of 15%. The D.D.T. content of the eggs was 2·5, 2·8 and 6·4 p.p.m. when 1, 2 and 4 lb. of D.D.T. had been used per acre of alfalfa. The fat tissues contained 52, 59 and 110 p.p.m. respectively. When 50, 100 and 200 p.p.m. of D.D.T. were added to the mash the average D.D.T. content of the eggs was 18, 34 and 46 p.p.m. The corresponding figures for the fat tissues were 340, 456 and 2,148 p.p.m.—D. LUKE.

FITZPATRICK, R. J. (1952). **The toxicity of red squill raticide to domesticated animals.**—*J. comp. Path.* **62,** 23-40. [Abst. from author's summary.] 229

Red squill powder is very unpalatable to pigs, sheep, goats, cats, dogs and bovines. Even at very low concentrations the poison is detected and disliked. Baits much weaker than field bait are refused even when the animals are denied food for up to 36 hours.

Red squill produces toxic effects in female pigs, sheep, goats, bovines, cats, dogs and rabbits, in doses per unit body weight, of the same order as those effective in the female rat. The most resistant animals in these experiments were goats; the least resistant were cats and calves. Except for very young animals a toxic dose for any pig or ruminant would not be available after the laying of baits on a farm.

Emesis may occur in some species after ingestion of red squill but it cannot be relied upon to protect the animal.

DI FRANCO, E. (1952). Sul Cestrum Parqui pianta velenosa per i nostri animali domestici. [*Cestrum Parqui,* **a plant poisonous to animals in Italy.**]—*Zooprofilassi.* **7,** 24-30. [English and Spanish summaries.] 230

The spread of *C. Parqui,* a native of South Africa, in certain districts of Italy was recorded. The plant is readily eaten by cattle and is highly poisonous. The symptoms produced resemble those of *Atropa belladonna* poisoning and extracts from the plant were shown to have an atropine-like action. It was suggested that pilocarpine might be a useful antidote.

—J. A. NICHOLSON.

ROSENBERG, M. M. & PALAFOX, A. L. (1950). **The effect of creeping indigo** (*Indigofera endecaphylla*) **when fed to growing chickens.** —*World's Poult. Sci. J.* **6,** 284-291. [Abst. from authors' summary.] 231

Creeping indigo meals and leaf meals were fed to chicks in four successive trials. A slight stimulation in growth rate was observed when 1·25% of the meal was incorporated in a chick starter ration as a substitute for alfalfa meal. No real difference in growth rate was observed when 2·5% was used; when 5, 10, 15, and 20% were substituted, the growth rate was significantly impaired in proportion with the amount fed.

RATHNASABAPATHY, V., DAVID, J. C., ISWARIAH, V. (1951). **Action of gigantin (active principle of *Madar* juice) on the amphibian heart.**—*Indian J. vet. Sci.* **31,** 95-105. [Abst. from authors' summary.] 232

Report on a study of the pharmacology of gigantin (the active principle of the juice of the shrub, *Calotropis gigantea*) on the amphibian heart. By a direct action on the heart muscle, it was found to increase the efficiency of the heart in physiological doses. Although it produces a synergetic action with calcium, it cannot replace it in the perfusion fluid. The action on the heart is analogous to that of digitalis in many respects.

WHITTEN, L. K. (1952). **Photosensitized keratitis in calves after dosing with phenothiazine.**—*Rep. XIVth. Int. vet. Congr.* **2,** 56-60. [French and German summaries. Abst. from author's summary.] 233

Keratitis in calves dosed with phenothiazine was studied, the trauma being dependent on the action of light of wavelengths of 320–360 mμ falling on the cornea. The injury occurs 12–36 hours after dosage, at which time the blood concentrations of phenothiazine derivatives are highest. The lesions appear 6–12 hours after exposure. The photosensitizing agent is phenothiazine sulphoxide, a common oxidation product of phenothiazine in the alimentary tract of animals. It is absorbed into the portal blood stream and converted in the liver to leucophenothiazine, which is excreted in the bile and urine. In calves and pigs the conversion is less efficient than in sheep, so that in calves and pigs the sulphoxide appears in the systemic circulation and in the aqueous humour. In sheep keratitis does not normally occur as the sulphoxide does not, as a rule, appear in the systemic blood stream. If very large doses are given, the sulphoxide does appear in the blood and aqueous humour, and keratitis may follow. Prevention depends upon protecting animals from direct sunlight the day after the administration of the drug.

See also abst. **311** (book, photosensitization).

PHARMACOLOGY AND GENERAL THERAPEUTICS.

(For treatment of specific infections see under the appropriate disease)

SCHWAN, H. P. & CARSTENSEN, E. L. (1952). **Advantages and limitations of ultrasonics in medicine.**—*J. Amer. med. Ass.* **149,** 121-125. [Authors' summary copied *verbatim.*] 234

At present the role of nonthermal effects of high frequency sound in medicine has not been evaluated. This provides an incentive for research but is actually a deterrent to the immediate clinical application of the technique. The transfer of sound energy into heat can be due to either volume heating or structural heating; the absorption of sound in the body by the protein molecules is an example of the first; the localized heating of muscle-bone interfaces is an example of the second type.

There are both limitations and advantages in the use of heating properties of ultrasound. Because of the coupling problem, the application of sound to tissue requires constant attention by the physical therapist. The localized heating of tissue interfaces may constitute an actual hazard unless used properly. On the other hand, ultrasound offers simultaneously high depth of penetration and good beaming. This combined with high absorption in muscle as compared with fat makes ultrasound especially suitable for localized deep heating.

WEBER, G. R. & BLACK, L. A. (1948). **Relative efficiency of quaternary inhibitors.** —*Soap.* **24,** No. 10. pp. 134-137 & 151, 153 & 155. 235

The authors discussed the limitations of the usual procedure of testing the efficiency of quaternary ammonium compounds. In these tests there may be sufficient germicide left upon the treated surface to prevent colony formation by viable cells surviving disinfection, thus indicating a false value for an inferior disinfectant. To overcome this difficulty, an inhibitor which prevents further action by the germicide should be used in the evaluation and should also be included in the buffered water employed for making swab-rinse plate counts of treated food utensils. Careful selection of the inhibitor is essential for accurate results. The requirements of such a compound are: (1) it should inhibit any further action of the germicide; (2) it should not be bacteriostatic. Some inhibitors, such as the anionic compounds, are very effective in arresting the germicidal action of quaternary compounds, but at the concentrations employed they are bacteriostatic. The authors recommended the use of lecithin and naphuride sodium for this purpose and discussed the effective ratios of inhibitor to germicide for different test organisms.—W. MOORE.

BARTELL, P. (1952). **Interference of aureomycin with the activity of penicillin** *in vivo.*—*J. infect. Dis.* **90,** 273-278. [Author's summary modified.] 236

Aureomycin, if administered simultaneously with penicillin, exerts a temporary, but definite, interference on the action of penicillin. This interference is conditioned by the sequence of administration and the time elapsing between injections of the antibiotics. The interference is not made apparent in survival experiments if one considers the combined use of the antibiotics without regard for optimal conditions necessary for maximal efficiency. Optimal conditions concerning the use of these antibiotics entail the administration of aureomycin four hours after the administration of penicillin. This observed interference does not contraindicate the use of aureomycin and penicillin in combined therapy, but the simultaneous use of these antibiotics does diminish the possibility of realizing the full potential of such a combination.

WIKLER, A. (1952). **Pharmacologic dissociation of behavior and EEG "sleep patterns" in dogs; morphine, N-allylnormorphine, and atropine.**—*Proc. Soc. exp. Biol., N.Y.* **79,** 261-265. 237

Electroencephalographic studies on 12 mongrel adult dogs showed that 15–30 min. after the injection of morphine, N-allylnormorphine or atropine, the electroencephalogram records were strikingly similar to those observed when the animals were sleeping naturally. The response to arousal stimuli was, however, quite different both in respect of behaviour and EEG pattern.—J. A. NICHOLSON.

LI, C. H., LIDDLE, G. W., REINHARDT, W. O. & BENNETT, L. L. (1951). **Preparation of a clinically active adreno-corticotropic hormone (ACTH) in good yield from sheep pituitary glands.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 665-668. [Abst. from authors' summary.] 238

An account of a method for the preparation in high yield, from whole sheep pituitary glands, of purified A.C.T.H., substantially free from growth, gonadotropic, thyrotropic, antidiuretic and pressor activities. Clinical and laboratory evidence indicates that A.C.T.H. prepared by this method is therapeutically and metabolically effective in human patients with rheumatoid arthritis.

GERMUTH, F. G., JR., OTTINGER, B. & OYAMA, J. (1952). **The influence of cortisone on the evolution of acute infection and the development of immunity.**—*Johns Hopk. Hosp. Bull.* **91**, 22-48. [Authors' summary slightly modified.] 239

Treatment with cortisone increased the susceptibility of rabbits to pneumococcal infection as manifested by (a) a greater mortality, (b) increased bacterial growth in the locally infected sites and (c) an enhanced bacteraemia. Evidence was obtained which suggested that the increased bacterial growth resulted from interference with the migration of phagocytic cells to the infected sites. Treatment with this hormone did not appear to affect the blood clearing mechanisms of the host nor did it interfere with the development of an immune response following infection. Cortisone protected animals against the toxic effects of typhoid vaccine and cultures of a strain of *Staphylococcus aureus*.

DERBES, V. J. [Associate Professor of Medicine, Tulane University of Louisiana School of Medicine.] & WEISS, T. E. (1951). **Untoward reactions of cortisone and ACTH.** pp. vii + 51. Oxford : Blackwell Scientific Publications. 8s. 6d. 240

With increasing supplies of cortisone becoming available the use of this compound in treatment of animal diseases will be studied. Information on the undesirable effects which have occurred in man following the use of both cortisone and A.C.T.H. is presented in a very convenient form.—M.C.

HOLM, L. W. (1952). **Effect of cortisone on pregnant ewes.**—*Fed. Proc.* **11**, 358. [Only abst. given. Abst. from abst.] 241

Non-pregnant ewes respond to cortisone with elevated blood glucose levels. During normal pregnancy blood sugar was not raised by cortisone, and in cases of lambing paralysis (ketosis) cortisone did not affect blood levels of either sugar or ketones.—N. DEAN.

HALPERN, B. N., BENACERRAF, B. & BRIOT, M. (1952). **Potentiation by adrenaline of protective effect of cortisone on histamine toxicity in adrenalectomized mice.**—*Proc. Soc. exp. Biol., N.Y.* **79**, 37-39. [Abst. from authors' summary.] 242

Adrenalectomized mice injected with cortisone tolerated five doses of histamine usually lethal for adrenalectomized mice. Similar mice injected with adrenalin tolerated 5–10 lethal doses of histamine. Others injected with both cortisone and adrenalin tolerated 50–100 lethal doses of histamine. These findings suggest that cortisone and adrenalin counteract the angiotoxic action of histamine on the small blood vessels in adrenalectomized animals. In normal mice these hormones do not modify the toxicity of histamine.

PRADHAN, S. N. (1952). **Antihistaminics in ophidiasis.**—*Indian J. med. Res.* **40**, 63-66. [Author's summary copied *verbatim.*] 243

Phenergan (promethazine), a recognized and potent antihistaminic drug, when previously administered, antagonizes the depressant action of both cobra and Russell's viper venoms on blood pressure and respiration, whereas anthisan (mepyramine) fails to do so. Phenergan also helps to raise the blood pressure already depressed by snake venom. Therapeutic use of phenergan in ophidiasis is suggested.

QUINLAN, J. (1952). **Observations on naphthoxyethanol suspension ("Anavenol") as an anaesthetic for Thoroughbred horses, with some remarks on anaesthesia with chloral hydrate.**—*J. S. Afr. vet. med. Ass.* **23**, 21-24. 244

Experience of anaesthesia with "anavenol" in 11 Thoroughbreds (two cases unsatisfactory and one fatal) has led the author to revert to the use of chloral hydrate intravenously; he has given the latter drug 2,000 times. He suggested that light chestnut Thoroughbreds may have idiosyncrasy to "anavenol".

—JOHN SEAMER.

BUTTERFIELD, W. J. H., WILLIAMS, A. M. & EVANS, E. I. (1952). **Effect of adrenocorticotropic hormone on the survival of homografts.**—*Lancet.* **262**, 737-741. [Abst. from authors' conclusions.] 245

The authors concluded that A.C.T.H. prolongs, but does not perpetuate, the survival of homografts on deep flame burns, and that early skin closure is just as urgent as it was before the discovery of this hormone.

AMMANN, K. (1952). Hautplastik und Transplantation beim Pferd. **[Plastic surgery and transplantation of skin in horses.]**—*Schweiz. Arch. Tierheilk.* **94**, 2-20. [English, French and Italian summaries.] 246

The author described the use of a modification of the method described by Braun of im-

planting numerous small pieces of epithelium deep into granulation tissue. Twelve photographs of the healing process were reproduced. —ROY MACK.

AMMANN, K. (1952). Erfahrungen mit der Osteosynthese bei den Gliedmassenfrakturen des Hundes. [**Pinning of fractures in dogs.**]—*Schweiz. Arch. Tierheilk.* **94**, 307-315. [English, French and Italian summaries.] **247**

A discussion of current methods, as used at the Zürich clinic.—ROY MACK.

See also absts. **3** (antibiotic-resistant staphylococci); **5-6** (mastitis); **10** (swine dysentery); **22-28** and **30** (TB.); **32-33** (ulcerative enteritis in quail); **43-44** and **46** (brucellosis); **50** (human brucellosis); **51** (fowl spirochaetosis); **54** (antibiotic against *Leptospira* infection); **60** (tetanus); **61** (botulism and *S. enteritidis* infection); **63-64** (effect of antibiotics on *C. albicans*); **68** (antifungal properties of polymyxins); **69** (effect of trimeton maleate on pathogenic fungi); **70** (fungicides); **71** (bacterial resistance to antibiotics); **72** (bacterial sensitivity to antibiotics); **75** (bovine trypanosomiasis); **84-86** (coccidiosis); **87** (cortisone against malaria in pigeons); **88** (*Babesia* infection in horses); **124** (antibiotics against virus hepatitis); **145** (methoxychlor); **147** (dips); **150** (butynorate); **156** (anthelmintic for dogs); **157** (effect of penicillin on *A. galli* in chicks); **159** (diethylcarbamazine); **161** (hetrazan); **162-163** (anthelmintics); **164** (streptomycin treatment of Roeckl's granuloma); **214** (chloromycetin treatment of ear canker in dogs); **222** (methionine); **225** (chlordane and toxaphene); **226-227** (parathion); **228** (D.D.T.); **229** (red squill); **233** (phenothiazine); **284** (ovarian retention cysts treated with diethylstilboestrol); **288** (hormone therapy of bovine sterility); **312** (book, veterinary therapeutics).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

SMITH, D. J. & COXE, J. W. (1951). **Reactions of isolated pulmonary blood vessels to anoxia, epinephrine, acetylcholine and histamine.**—*Amer. J. Physiol.* **167**, 732-737. [Authors' summary modified.] **248**

The comparative reactivity of the isolated surviving pulmonary arteries and veins of man, pig, dog and cat to epinephrine, acetylcholine and histamine were studied. Anoxia did not cause vasoconstriction of the isolated major pulmonary blood vessels. The authors discussed the relationship of the sensitivity of the pulmonary veins to the increased blood histamine in anoxia.

NEWLAND, H. W., MCMILLEN, W. N. & REINEKE, E. P. (1952). **Temperature adaptation in the baby pig.**—*J. anim. Sci.* **11**, 118-133. [Authors' summary copied *verbatim*.] **249**

Body temperature development of baby pigs was studied under various conditions of environmental temperature. The effects of chilling on body temperatures and blood changes in pigs ranging in age from birth to three weeks old were studied.

The body temperature regulating mechanism in the new-born pig is not fully developed. There was a body temperature drop of 3° to 13°F. in baby pigs during the first 30 minutes after birth, the amount of drop being related to the size of the pig and the environmental temperature. The initial drop was followed by a gradual return toward normal, which in environments of 60°– 75°F. was reached in about two days, and in environments approaching freezing temperatures was reached in about ten days.

Pigs 24 hours old withstood a temperature of 34°F. with less drop in body temperature than pigs under 4 hours old.

There was a significant correlation between the weight of a pig and its ability to adapt itself to its environment. Small pigs in a fasting state passed into a coma sooner when chilled than pigs of comparable size having access to sow's milk.

Chilling of two-day-old pigs caused the blood hematocrit to decrease, which is a reversed reaction of the normally functioning temperature regulating mechanism.

There was an increase in blood sugar when one-day-old pigs were chilled at 34°F. Pigs fasted eight hours before chilling showed less glucose increase than those fasted three and five hours.

HUGGETT, A. ST. G., WARREN, F. L. & WARREN, N. V. (1951). **The origin of the blood fructose of the foetal sheep.**—*J. Physiol.* **113**, 258-275. **250**

Glucose passed from mother to foetus or foetus to mother; fructose passed from mother to foetus but not from foetus to mother. When glucose was injected into the maternal circulation there was a sharp rise in glucose in the foetal circulation followed by a gradual and prolonged rise in fructose in the foetus. The site of formation of the fructose was the placenta. —R. MARSHALL.

FRANCHESCHINI, G. (1950). Contribution à l'étude du lait de chienne. Lait normal—laits anormaux. [**The milk of the bitch.**]—*Thesis, Alfort.* pp. 62. **251**

The author discussed the milk of the bitch from its physical, chemical and biological aspects, both in health and disease. Compared with cow's milk, it is much richer in dry matter, fat and protein generally, especially in albumin, but is much poorer in lactose.

This explains the difficulties often encountered in rearing puppies on cow's milk. —D. S. RABAGLIATI.

LOVELOCK, J. E. & PORTERFIELD, B. M. (1952). **Blood clotting: the function of electrolytes and**

of calcium.—*Biochem J.* **50,** 415-420. [Authors' summary modified.] 252

The authors reported experiments which indicate that the activity of oxalate, citrate and fluoride ions in preventing coagulation is complex, and is due not only to their ability to depress the calcium ion concentration of blood, but also to their ionic charge. The concentrations of calcium, magnesium and barium ions needed for the coagulation of plasma containing various concentrations of salts was measured. These measurements indicate that human plasma will not coagulate if the ionic strength is less than 0·01 or more than 0·5. The concentration of alkaline earth elements required for coagulation was found to vary with ionic strength, calcium concentration as low as 0·08 mM. causing coagulation in plasma of ionic strength 0·03.

The authors discussed the function of calcium in coagulation. It was suggested that it is concerned with the maintenance of an electrolyte balance suitable for the interaction of the plasma colloids.

SLOVITER, H. A. (1952). **Recovery of human red cells after prolonged storage at –79° C.** [Correspondence.]—*Nature, Lond.* **169,** 1013-1014. 253

S. described a method of storing human erythrocytes at −79°C. giving recovery rates approximating 90% after one day, 80% after one month and 70% after six months.

—CLIVE BRIGGS.

MOLLISON, P. L., SLOVITER, H. A. & CHAPLIN, H., JR. (1952). **Survival of transfused red cells previously stored for long periods in the frozen state.**—*Lancet.* **263,** 501-505. [Authors' summary copied *verbatim.*] 254

Human red cells stored in 15% glycerol at −79°C. for six months are capable of normal survival after transfusion. When they are stored at −15°C. for about eighty days, only a small proportion of the red cells can be recovered after thawing; however, these also have a normal post-transfusion survival. The implications of these observations are discussed.

CASELLI, P. & CAPUTO, A. (1951). Comportamento del nucleo delle emazie di pollo nella emolisi da saponina. [**Behaviour of the nucleus of avian erythrocytes during saponin-induced haemolysis.**]—*Boll. Ist. sieroter., Milano.* **30,** 290-296. [English summary modified.] 255

The chemical and microscopical behaviour of the fowl red cell nucleus during mild haemolysis varies with saline concentrations. When haemolysis takes place in strongly hypertonic and in strongly hypotonic solutions the nuclei are dissolved. The integrity of the nuclei is preserved if haemolysis takes place in solutions between 0·1 and 0·3 molar concentration of NaCl, and also in ordinary physiological saline (0·14 molar), corresponding exactly to the behaviour of the nuclear structures of bacteria lysed by lysozyme.

GARNER, R. J. (1952). **Some observations on the determination of serum protein levels in cattle.**—*Biochem. J.* **50,** 439-440. [Author's summary copied *verbatim.*] 256

The tyrosine content of mixed bovine serum proteins has been determined. 1 mg. of tyrosine is contained in 19·78 mg. of total protein (tyrosine determined using the Folin and Ciocalteu reagent) or 19·68 mg. of total protein (tyrosine determined spectrophotometrically).

A linear relationship exists between the serum protein concentration and the serum specific gravity, provided that the latter falls within the range 1·0220 to 1·0365. Within these limits $P = 362{\cdot}0\ (G - 1{\cdot}0020)$.

BARRON, D. H. (1951). **Postnatal changes in the oxygen capacity and dissociation curve of the blood of lambs.**—*Yale. J. Biol. Med.* **24,** 191-195. [Author's summary modified.] 257

Changes in the character of the oxygen dissociation curve and the oxygen capacity of the blood were followed during the postnatal period in eight lambs. The oxygen capacity dropped toward the adult level within the first fortnight or three weeks after delivery; the dissociation curves shifted rapidly toward the right during the first 15 days after birth and then gradually reached the adult field between 34 to 48 days after birth.

LYMAN, C. P. & HASTINGS, A. B. (1951). **Total CO_2, plasma pH and pCO_2 of hamsters and ground squirrels during hibernation.**—*Amer. J. Physiol.* **167,** 633-637. [Authors' summary copied *verbatim.*] 258

The acid-base balance of normal anesthetized hamsters and ground squirrels was compared with the same species in the hibernating state. The pH and CO_2 content of the blood plasma were measured, and from these data the CO_2 tension was calculated. The CO_2 tension was found to be higher in normal anesthetized animals than in those in the hibernating state. It is concluded that the data give little evidence for the profound loss of sensitivity in the respiratory center which has been claimed to be typical of animals in the hibernating condition.

EARLE, I. P. (1952). **Inorganic phosphorus content and phosphatase activity of the blood serum of foals.**—*J. anim. Sci.* **11**, 191-195. [Author's summary modified.] 259

Determinations of inorganic phosphorus content and of alkaline phosphatase activity on blood serum obtained from 12 foals at various times between the hour of birth and six months of age yielded (a) a mean value of $4{\cdot}30 \pm 0{\cdot}32$ mg.% of inorganic phosphorus at birth, a level which increased rapidly during the first 48 hours, then more gradually to a maximum of $8{\cdot}75 \pm 0{\cdot}31$ mg.% between two and three months, after which it tended to decline; (b) a mean alkaline phosphatase activity equivalent to $109 \pm 9{\cdot}2$ Bodansky units per 100 ml. of serum at birth, the level declining rapidly for the first 48 hours to a mean value of $73{\cdot}5 \pm 6{\cdot}0$ units and then progressively more slowly to a mean level of $17{\cdot}3 \pm 0{\cdot}9$ units at six months of age.

The observations indicated that the changes in both inorganic phosphorus and phosphatase activity immediately following birth are, in large part at least, unrelated to food intake.

EARLE, I. P. & CABELL, C. A. (1952). **Blood chemistry of Equidae—some variations in inorganic phosphorus, alkaline phosphatase activity, calcium, and magnesium in blood serum of horses.**—*Amer. J. vet. Res.* **13**, 330-337. 260

The chemistry of the blood of horses was studied in relation to breed, season, nutrition, lactation, geographical location and age. This last was found to cause the greatest variation, affecting especially serum phosphatase activity and blood inorganic phosphorus.

—JOHN SEAMER.

PLOMMET, M. (1952). Electrocardiographie chez le chien. **[Electrocardiography in the dog.]**—*Rev. vét. milit.* **7**, 73-91. 261

Electrocardiographic tracings from 25 normal Alsatian dogs were discussed. Normal tracings could be obtained only when the animals were standing quietly. Bipolar leads gave the best results, particularly right fore-left hind-legs. Average values were: duration of P wave 0·04 sec., P-Q interval 0·8 to 0·12 sec., QRS complex 0·04 to 0·06 sec., S-T interval 0·06 to 0·10 sec., and Q-T interval 0·06 to 0·20 sec.—J. A. NICHOLSON.

KOUNTZ, W. B. (1951). **Thyroid function and its possible role in vascular degeneration.** pp. 62. Springfield, Ill.: Charles C. Thomas; Oxford: Blackwell Scientific Publications, Ltd. 16s. 6d. 262

It is difficult to assess the value of an argument that is presented in a rambling fashion, for considerable effort is required from the reviewer, in the first place to discover the nature and quantity of the evidence presented and then to assess its quality. The argument in this book is simply that low metabolic rate hastens the spread of arterial disease, but it is presented in such an incoherent form that the general effect is singularly unconvincing.

Evidence is culled from animal experiments and from human cases. Considerable space is taken up by the discussion of individual patients and of small sets of hospital data. The references are almost exclusively to American and German literature.—F. B. LEECH.

DUGUID, J. B. (1952). **The arterial lining.**—*Lancet.* **263**, 207-208. 263

A consideration of the findings in arterial disease, suggests that a mural thrombus arises from a deposition of fibrin which first loses its fibrillary structure and normal staining properties and then becomes homogeneous, staining deeply with eosin. Ultimately it may be invaded by connective tissue cells thus appearing as a hyaline degeneration. This agrees with the observation that when a thrombus becomes canalised, a new endothelial lining develops so that the thrombus becomes external to the lining and it eventually becomes a part of the vessel wall where it may be recognised as a fibrous thickening. A deposition of fibrin also accounts for the narrowing of the lumen seen in arterial disease which is hard to explain under the present theory of degeneration.

—J. A. NICHOLSON.

ANDREWS, W. H. H. & MAEGRAITH, B. G. (1951). **Studies on the liver circulation. III. The vascular responses on the perfused canine liver to adrenaline and acetylcholine.**—*Ann. trop. Med. Parasit.* **45**, 255-260. [Abst. from authors' summary.] 264

The canine liver was perfused by a technique designed to minimize the occurrence of hepatic anoxia.

The perfused liver may exist in one of two states, a 'red' state, in which the authors believe that its vascular condition is probably disturbed minimally, and a 'blue' state, in which there is hepatic venous constriction.

Adrenalin reduces the blood inflow in the perfused liver in both the red and the blue states. It reduces the outflow in the red state and increases it in the blue state.

Acetylcholine constricts the hepatic veins in the liver in the red state; this effect is far more marked when the drug is injected into

the hepatic artery than when it is injected into the portal vein. It has little action on the liver in the blue state, possibly because of prevailing hepatic venous constriction.

BRUNAUD, M. & DUSSARDIER, M. (1952). Recherches sur la motricité du tube digestif des équidés. I. Motricité normale de l'estomac. II. Motricité normale du duodenum et du caecum. [**Peristalsis of the digestive tract of horses. I. Stomach. II. Duodenum and caecum.**]—*Rev. Méd. vét.* **103,** 65-81 & 342-355. **265**

I. The movements of the alimentary tract of anaesthetized horses and donkeys were recorded by means of balloons inserted into the stomach, duodenum and caecum. Six hours after a meal, gastric contractions may be absent or there may be contractions lasting up to 40 sec. and recurring every 3–5 min. These probably represent segmenting movements and do not appear to follow any regular law. In some cases both gastric and duodenal movements occurred together but whether true peristaltic waves spread from the pylorus to the duodenum could not be determined.

II. In the duodenum, peristaltic rushes were observed as well as pendular movements and movements due to variation in tone. In the caecum there were strong contractions which involved all the musculature whereby its contents would be forced into the colon. Whether these contractions represented peristaltic movements could not be determined. In addition, the authors observed tonus waves with other contractions imposed upon them, these being referable to contractions of the sacculations.

—J. A. NICHOLSON.

ROGERS, H. J., WEIDMANN, S. M. & PARKINSON, A. (1952). **Studies on the skeletal tissues. II. The collagen content of bones from rabbits, oxen and humans.**—*Biochem. J.* **50,** 537-542. [Authors' summary slightly modified.] **266**

The organic matrix in the bones of rabbits, oxen, and human beings consists of from 90 to 96% collagen, or collagen-like proteins. Variations in the amount of total nitrogen relative to calcium in bones correspond to true differences in degree of calcification, and not to the inclusion of proteins other than collagen.

The degree of calcification of mid-femur samples of human bone increases with increasing age of the subject. This process is rapid up to the age of 20–25 years in human beings, but probably continues much more slowly throughout life.

The crude gelatin extracts from bones of rabbits and oxen which have a low calcium to nitrogen ratio are less contaminated by small amounts of other proteins than are those from the more highly calcified structures. This may possibly be correlated with the presence of blood vessels in the latter.

MOE, G. K. [Organized by.] & CHRISTMAN, R. C. [Edited by.] (1951). **Pituitary-adrenal function. A symposium organized by the Section on Medical Sciences of the A.A.A.S. and presented at the New York meeting on December 28–29, 1949.** pp. x+211. Washington, D.C.: American Association for the Advancement of Science. $4.00. **267**

Twenty-three papers presented at a symposium are reproduced, dealing with many aspects of the adrenal and pituitary hormones. Some of the papers are concerned with the action of these hormones in relation to human diseases but many of them are of more general interest.

Of special interest to veterinary workers are those by T. F. Dougherty on the Protective role of adrenal cortical secretion in the hypersensitive state; by B. L. Baker on Modification of body structure by adrenocortical secretions with special reference to the regulation of growth; by E. H. Venning on Adrenal function in the new-born; and by C. N. H. Long on Factors regulating the adrenal cortical secretions.—M.C.

SIMPSON, S. A., TAIT, J. F. & BUSH, I. E. (1952). **Secretion of a salt-retaining hormone by the mammalian adrenal cortex.**—*Lancet.* **263,** 226-228. [Authors' summary copied *verbatim.*] **268**

Extracts of adrenal venous blood from a monkey and a dog have been shown to contain a substance very active in its effect on the urinary Na^{24}/K^{42} ratio of adrenalectomized rats. The effect is similar to that previously obtained with extracts of adrenal gland.

Evidence is presented that this substance is secreted in biologically significant amounts and can be reasonably described as a mineralocorticoid.

DAVENPORT, H. E., HILL, R. & WHATLEY, F. R. (1952). **A natural factor catalyzing reduction of methaemoglobin by isolated chloroplasts.**—*Proc. R. Soc.* Ser. B. **139,** 346-358. [Authors' summary copied *verbatim.*] **269**

The crude or unwashed preparations of chloroplasts from a variety of plants will reduce muscle methaemoglobin in the light, but not

in the dark. The chloroplasts after washing do not reduce the methaemoglobin unless a soluble factor present in the crude chloroplast suspension is restored. The factor is present in acetone leaf extract, and the activity is equivalent to that in a corresponding amount of crude chloroplast suspension. In the two plants examined evidence was obtained for the relative absence of the factor in the parts of the plant free from chlorophyll.

The factor, provisionally called 'the methaemoglobin reducing factor', is thermolabile, not dialyzable and precipitated with nearly saturated ammonium sulphate. It is stable between pH 5 and 9 at 20°C. These properties could be associated with those of a protein. The rate of hydrogen transfer in the reduction of the methaemoglobin by the factor plus chloroplasts is, in terms of chlorophyll content, of the same order as the direct oxygen-producing reaction with the artificial hydrogen accepting reagents. For chloroplasts of *Pisum sativum* an optimum at pH 8 was found. The activity of the system is about halved by the presence of M/5 concentration of a variety of neutral salts.

It is concluded that the factor is reduced directly by the illuminated chloroplasts, that oxygen is produced in the process, and that the factor acts in the sense of a catalyst for the reduction of methaemoglobin in the illuminated system.

I. Yang, S. H. (1952). **Histochemical studies on bovine sweat glands.**—*J. agric. Sci.* **42,** 155-158. 270

II. Goodall, A. M. & Yang, S. H. (1952). **Myoepithelial cells in bovine sweat glands.**—*Ibid.* 159-161. 271

I. A detailed histochemical study was made of the so-called sweat glands and their secretions of Ayrshire cattle and to a limited extent of zebu cattle. The results indicate that the sweat glands of these two types of cattle do not differ. They both, however, differ markedly from human eccrine or apocrine sweat glands and they probably cannot be regarded as functional analogues of human sweat glands. The real function of bovine sweat glands has therefore still to be determined. The zebu material used in the study was of Jamaican and Sudanese origin.

II. Using similar material to that in abst. 270 (I *supra*), spindle-shaped myoepithelial cells with longitudinal myofibrils were demonstrated in the sweat glands of Ayrshire and zebu cattle. In both breeds the cells are similar in structure, location and arrangement.—M.C.

Addison, C. C. & Furmidge, C. G. L. (1952). **Physico-chemical studies on the application of insecticides to sheep fleece. I. Introduction to the series. II. The action of dilute solutions of cationic wetting agents on fleece. III. The action of micellar solutions of cationic wetting agents on fleece.**—*J. Sci. Fd. Agric.* **3,** 315-320, 320-330 & 330-336. [Authors' summaries slightly modified.] 272

I. The authors defined the scope and the aim of the experimental work to be described in the series. Significant factors in the formulation, efficiency and mode of action of sheep dips were discussed, with special reference to bath depletion, the time factor, and the influence of wetting agent, wool grease and suint, insecticide solvent and pH. Previous work in this field was reviewed.

II. The reaction of natural fleece with wetting agents changes sharply at a critical concentration near that for micelle formation in solution. The authors described the behaviour of cationic wetting agents at concentrations below this critical value. Measurements of the apparent removal from aqueous solution (termed the 'inactivation') of cetylpyridinium chloride by samples of Scotch Blackface fleece over periods of time show that such inactivation is considerable, even after one minute. The inactivation was determined from decrease in the interfacial activity of the solution after contact with the fleece.

The high inactivation observed is due to grease and suint on the wool; inactivation by the cleaned fibres is relatively slight. Suint influences the interfacial activity of the solution by co-precipitation between the long-chain suint anions and the cetyl cations, and also by the introduction of inorganic salts. High adsorption, with some absorption, occurs at the grease surface. Consideration is given to the mutual interference between these two effects.

The inactivation is directly proportional to concentration up to 0·0025M. and the isotherm is almost independent of grease and suint content of the fleece; reasons for this, and possible implications, were discussed.

III. A study of the influence of various samples of Scotch Blackface fleece on the interfacial activity of micellar solutions of cetylpyridinium chloride. The inactivation of cetyl compounds varies considerably with grease and suint content of the fleece. The full inactivation-concentration curve can be divided into three distinct sections, and the mechanism of the reactions taking place in each concentration range was deduced from measurements of rate of change of fleece weight, pH, and inactiva-

tion. When natural fleece is immersed in these more concentrated solutions, the system passes successively through the mechanisms typical of each section, *i.e.*, formation of a suspension of insoluble cation-suint anion compounds, with some adsorption to the grease on the fibres (α section); solubilization of some grease with the formation of interfacially active complexes (β section); flocculation and redeposition of suspension on to the fibres (γ section).

See also absts. **291** (gastric paresis in parturient cows); **292** (uterine motility in cows); **295** (vertebrate sexual cycles); **296** (respiration in calves raised under cold conditions); **297** (blood sugar and haemoglobin responses to anoxia in sheep); **300** (bacteriology of bovine rumen contents); **305** (properties of components of thyroid tissue); **306** (blood coagulation); **313** (book, cell physiology); **314** (book, connective tissues); **315** (book adrenal cortex); **316** (book, renal function); **317** (book, adaptation syndrome); **319** (book, aging).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

SVINTSOV, P. M. (1951). **[Veterinary services in Bulgaria.]**—*Veterinariya, Moscow.* **28,** No. 6. pp. 58-59. 273

The veterinary organization forms an independent department within the framework of the Ministry of Agriculture. The duties of veterinarians include inspection of meat and milk and their products and they are partly responsible for the sale of the latter. They also share the responsibility for supervising the building of clinics, isolation centres, abattoirs and storage plants.

Artificial insemination is of high importance. The incidence of glanders, sheep pox, rabies and Newcastle disease has been much reduced. Equine infectious anaemia and *Brucella* infection in sheep have never been known to occur in Bulgaria.

Veterinary education is given in the veterinary faculty of the Sofia Agricultural Academy. A Zootechnical Institute, a school for veterinary assistants ("feldschers") and a number of schools for shoeing smiths have also been established. Research and the preparation of vaccines and sera are done at 18 unspecified places.

A five-year, 1949-53, agricultural plan is being carried out. When completed, 62% of all land is scheduled to come under government farms and it is aimed to augment the number of cattle by 25%, pigs by 153% and fowls by 96%, and to increase the average productivity of all farm stock by 44%.—F.A.A.

See also absts, **61** (botulism and *S. enteritidis* infection); **309** (Moscow veterinary museum).

LIVESTOCK HYGIENE

ANON. (1951). **Pasture and fodder development in Mediterranean countries.** pp. 178. Paris: O.E.E.C. Tech. Assist. Mission No. 56. 274

Pages 11–105 of this booklet are devoted to a most interesting description of Mediterranean countries, with special emphasis on agricultural methods and policies.

Pages 123–161 are a series of papers by 11 speakers on improved methods of land management.—G. B. S. HEATH.

See also abst. **318** (book, veterinary hygiene).

REPRODUCTION AND REPRODUCTIVE DISORDERS

LALANNE, A. & DERBAL, Z. (1951). Essai d'insémination artificielle au Soudan. **[Trials of artificial insemination in the Sudan with semen imported from France.]**—*Bull. Serv. Élev. Industr. anim., A.O.F.* **4,** No. 4. pp. 7-20. 275

Semen was sent by air from Paris, arriving 54 hours after collection. Up to four more days in the refrigerator elapsed before insemination, which was carried out by the intracervical route using a coldlite speculum. In the local "N'dama" cattle, the duration of heat is only 6–18 hours, and its occurrence is irregular and limited to the season February–July. Vasectomised teaser bulls thus become almost a necessity, and the production of cross-bred calves is possible only at a restricted rate. Three live bull calves and one heifer calf were born from 26 cows inseminated from Brown Swiss and Tarentais bulls in 1949-50 and averaged about double the birth weight of the local calves. After the third week the milk yield of the indigenous dam ceased to suffice for the normal growth requirements of the cross-bred calf, as evidenced by the behaviour of a control individual which received no supplement. The others were given cod-liver oil, and up to three pints daily of milk thickened with cassava and rice flour, and some calcium phosphate. From two months old a calf meal was fed and the animals were kept under cover during the heat of the day.

It was concluded that the cross-bred calves are unsuited to the husbandry methods which

at present prevail in the province, though these may in time show a sufficient general improvement to render large-scale cross-breeding an economic proposition.—F. L. M. DAWSON.

EASTERBROOKS, H. L. (1951). **Antibiotic treatment of diluted bull semen used in artificial insemination.**—*Fertility & Sterility*. **2**, 430-443. [Abst. from author's summary.] 276

E. reviewed 55 publications and described three experiments to determine the effectiveness of streptomycin, as compared with other antibiotics, for improving the fertility of bull semen diluted in egg yolk, citrate, and sulphanilamide and used in the routine daily operation of the Connecticut Artificial Breeding Association. Results were based on the 60–90-day% non-returns to first artificial services recorded. (1) 1,022 cows were inseminated with diluted bull semen containing 500 μg. of dihydrostreptomycin sulphate per ml. and 986 with split portions of the same diluted semen containing 50 μg. of aureomycin hydrochloride with sodium glycinate. A trend was established in the 4·0% non-return increase for the semen treated with streptomycin. (2) 671 cows were inseminated with diluted bull semen containing 500 μg. of dihydrostreptomycin sulphate per ml. and 666 with diluted semen containing 500 μg. of chloromycetin (chloramphenicol). A trend was established in the 3·1% non-return increase for the semen treated with streptomycin. (3) 1,157 cows were inseminated with diluted bull semen containing 500 μg. of dihydrostreptomycin sulphate per ml. and 1,153 with split portions of the same diluted semen containing 20 μg. of terramycin hydrochloride. No statistical significance was associated with the 0·1% non-return increase for the semen treated with streptomycin.

It was suggested that 500 μg. of dihydrostreptomycin sulphate per ml. may be the best antibiotic treatment of bull semen diluted in egg yolk, citrate, and sulphanilamide on the basis of knowledge available in the spring of 1951.

GHOSH, D. & LARDY, H. A. (1952). **The nature of a yeast-stimulating agent in mammalian spermatozoa.**—*J. anim. Sci.* **11**, 545-559. [Authors' summary modified.] 277

A search for the cause of differences in the metabolic characteristics between bovine spermatozoa obtained from ejaculated semen and those collected from excised epididymides led to the finding that extracts of semen stimulate respiration and glycolysis of epididymal spermatozoa and fermentation of yeast.

A method was described for the biological assay of the yeast-stimulating substance. It can be obtained from semen of the bull, ram, boar, rabbit and man. It can also be obtained from testis tissue but not, by the same procedures, from a variety of other tissues.

On the basis of yeast assay the regulator seems to occur in a bound inactive form in epididymal or freshly ejaculated spermatozoa from which, under the influence of seminal fluid, it is progressively liberated into the medium, presumably in a combination still inactive for yeast cells. The yeast-active component can be liberated by mild alkaline hydrolysis of spermatozoa or whole semen.

A method was described for preparing partially purified concentrates of regulator from semen suitable for studying its biochemical significance. The yeast-active principle was isolated in crystalline form from hog testis extract and identified as elemental sulphur.

MARDEN, W. G. R. & CHANG, M. C. (1952). **The aerial transport of mammalian ova for transplantation.**—*Science*. **115**, 705-706. 278

Ova, removed from white Californian rabbit does, which had been fertilized 24 hours previously, were transported from the U.S.A. to Cambridge, England, where they were transplanted into black does 27 hours later. Two Californian offspring were produced by one recipient rabbit.—A. H. LINTON.

SMITH, A. U. (1952). **Behaviour of fertilized rabbit eggs exposed to glycerol and to low temperatures.** [Correspondence.]—*Nature, Lond.* **170**, 374-375. 279

The ova could be treated with up to 15% glycerol at 37°C. and then cooled to −15°C. without much injury.—R. MARSHALL.

KOCH, W. & SCHWAB, H. (1952). Sperma-Konservierung im Uterus der Fledermaus. [**Preservation of semen in the uterus of the bat.**] —*Fortpfl. Besamung Haustiere*. **2**, 22. [Published in *Deutsche tierärztliche Wochenschrift*. **59**, Nos. 11-12.] 280

As spermatozoa retain their fertilizing ability for as long as six months in the uterus of the bat, it was thought that a study of this phenomenon might be of some assistance in devising new methods for preserving spermatozoa. However no evidence was found that the spermatozoa receive any special nourishment in the bat's uterus, the conditions of storage being essentially the same as in the epididymis.

—J. A. NICHOLSON.

ROBINSON, T. J. (1952). **Role of progesterone in the mating behaviour of the ewe.** [Corre-

spondence.]—*Nature, Lond.* **170,** 373-374. **281**

By using various combinations of pregnant mare's serum and progesterone, oestrus was produced in ewes during the anoestrous period, and fertilized ova were recovered from the ewes. It was concluded that progesterone should be administered at least 48 hours before P.M.S. is given.—G. B. S. HEATH.

ROBINSON, G. E., JR. & NALBANDOV, A. V. (1951). **Changes in the hormone content of swine pituitaries during the estrual cycle.**—*J. Anim. Sci.* **10,** 469-478. **282**

From the bio-assay of individual pituitary glands from 33 female pigs killed at intervals throughout the oestrous cycle the authors concluded: (1) that gonadotrophin is lowest during the two days of heat, and remains low until the 8th day when it increases suddenly, remaining high until the 20th day of the cycle; (2) that there is complete correspondence bebetween the rise/fall in pituitary gonadotrophin and the rise/fall in the number but not the size of follicles in the ovaries; (3) that there is no change in weight in the pituitary gland during the cycle, and no association between its weight and the rate of hormone secretion; (4) that so far as gonadotrophin is concerned, the bio-assay of the pituitary gland actually reflects the rate of hormonal secretion.

—J. T. DONE.

SYKES, J. F. & WREN, T. R. (1951). **Hormonal development of mammary tissue in dairy heifers.**—*J. Dairy. Sci.* **34,** 1174-1179. [Authors' summary and conclusions copied *verbatim.*] **283**

Mammary gland tissue in dairy heifers that had been given stilbestrol injections was observed to be abnormal in structure. Progesterone, and to a lesser extent pituitary extract injected in conjunction with stilbestrol, resulted in more normal development and thus demonstrated the necessity of these hormones for normal udder development in heifers. The ratio of progesterone to stilbestrol necessary for normal development of the udders of dairy heifers appears to be somewhat in excess of 1 mg. of progesterone to 25 γ of stilbestrol.

JANES, R. G. & BRADBURY, J. T. (1952). **Ovarian retention cysts in hypothyroid rats treated with diethylstilbestrol.**—*Proc. Soc. exp. Biol., N.Y.* **79,** 187-188. [Authors' summary copied *verbatim.*] **284**

Ovarian cysts were encountered in rats with a chronic hypothyroidism but their frequency was increased when such animals were given diethylstilbestrol. The cyst formation is probably associated with degenerative changes in the ovary.

ROSENMAN, R. H., BYERS, S. O. & FRIEDMAN, M. (1952). **The hepatic synthesis of cholesterol in the pregnant rat.**—*Johns Hopk. Hosp. Bull.* **91,** 105-108. [Authors' summary modified.] **285**

Using the biliary cholesterol concentration as an index of hepatic synthesis of cholesterol, the latter was studied in pregnant and *post-partum* rats. The results obtained suggested that a significant depression of the rate of hepatic synthesis of cholesterol occurred in the pregnant rat, with a return toward normal early in the *post-partum* state. The possible mechanism of these changes was discussed, with particular reference to the possibility that the high oestrogen levels occurring in the pregnant state might be responsible.

RICHARDS, M. B. & GREIG, W. A. (1952). **The effects of additions of calcium carbonate to the diet of breeding mice. I. Effects on reproduction and on the heart and thymus weights of the weanlings.**—*Brit. J. Nutr.* **6,** 265-280. [Authors' summary copied *verbatim.*] **286**

GREIG, W. A. (1952). **The effects of additions of calcium carbonate to the diet of breeding mice. II. Haematology and histopathology.** —*Ibid.* 280-294. [Author's summary copied *verbatim.*] **287**

I. In a breeding test on mice, using the method of continuous monogamous mating, three levels of calcium carbonate were added to a slightly modified B diet of Sherman and to three further modifications of it. On all the diets the highest addition of calcium carbonate, which gave a Ca intake of 1·1% and a Ca : P ratio of approximately 2·3, significantly lowered the number and total weight of young weaned and increased the number and proportion of deaths. There was also some decrease in the number of births. When supplements of ferric citrate and sodium dihydrogen phosphate were added to the diet, a number of mothers in the high Ca groups failed to rear their first litters, but in the litters that were reared the weaning weights seemed to be favourably affected by the addition of Fe or by a reduction of the Ca : P ratio.

Both absolutely and relatively to bodyweight the heart weights of the weanlings were significantly increased by Ca and decreased by Fe, whereas thymus weights were decreased by Ca and increased by Fe. The high Ca level

also caused a significant increase in the absolute and relative heart weights of the mothers. Although the percentage of dry matter in the hearts of the weanlings was significantly lowered by the higher level of Ca, there was a marked increase in the absolute weight of heart dry matter at this level, indicating the presence of a cardiac hypertrophy. A highly significant relationship was found between heart weight and blood haemoglobin in the weanling mice, an increase in heart weight accompanying a decrease in Hb. The relationship between log heart weight, expressed in mg./100 g. bodyweight, and log Hb was linear.

II. Weanlings born of white Swiss mice on diets containing 2% added calcium carbonate were anaemic when compared with weanlings from diet-groups with 0 or 0·5% added calcium carbonate. The dams on the high-calcium carbonate diets were also anaemic.

The addition to the diet of 10 p.p.m. iron as ferric citrate prevented the anaemia, but merely restoring the calcium: phosphorus ratio with sodium dihydrogen phosphate did not do so.

Second litters in all diet-groups were less anaemic than first litters.

The anaemia in both weanlings and dams presented the haematological features of iron-deficiency anaemia, except that the mean cell volume was not constantly reduced; possible reasons for this are discussed.

In association with the anaemia in the weanlings, there were fatty deposits in the liver, marked hyperlipaemia, and sometimes degenerative changes in other organs.

Consideration of the literature suggests that some unrecognized factor is important in dietary iron-calcium-phosphate relationships.

EASTERBROOKS, H. L. (1952). **The treatment of certain types of sterility in cattle with the hormone E.C.P.–A progress report.**—*Storrs agric. Exp. Sta.* Inf–38. pp. 4. 288

Intramuscular injection of the hormone ECP (estradiol cyclopentylpropionate) produced oestrus in 11 of 15 anoestrous cows and 17 of 20 cows with retained corpus luteum.

—L. M. JONES.

BLACK, D. J. G., GETTY, J. & MORRIS, T. R. (1952). **'Infra-red' brooding and the crooked-toe problem in chicks.** [Correspondence.]—*Nature, Lond.* **170**, 167. 289

It appears that this deformity associated with bright emitter infra-red brooding is a hereditary susceptibility only revealed by such conditions as in this type of brooding.

—F. T. W. JORDAN.

BILLINGHAM, R. E., LAMPKIN, G. H., MEDAWAR, P. B. & WILLIAMS, H. L. (1952). **Tolerance to homografts, twin diagnosis, and the freemartin condition in cattle.**—*Heredity.* **6**, 201-212. [Authors' summary copied *verbatim.*] 290

Thirty-six out of 42 cattle of two-egg twin birth were found to be completely tolerant to skin homografts transplanted from their respective twins. Homografts between full siblings or from dam to offspring of separate or twin birth are not tolerated. All two-egg twins show some degree of tolerance to homografts transplanted from one to the other, and the degree of tolerance is widely variable. Two-egg twins are not symmetrical in their responses: grafts from one twin to the other may be tolerated although grafts of the reciprocal transplantation are eventually destroyed. The proportion of cattle of two-egg twin birth that show complete tolerance to grafts from their respective twins corresponds closely with the proportion of females in two-egg twin pairs of unlike sex that reveal some degree of infertility or sexual abnormality. It is therefore argued that homograft tolerance and the freemartin state share at least one necessary causal condition in common. This condition is presumed to be the confluence of the foetal circulations of cattle twins. Mutual graft exchange cannot be used as a method of distinguishing one-egg from two-egg twins in cattle. In each of four trials, grafts from a dam elicited significantly different reactions after transplantation to each of her two-egg twin calves. Later experiments may reveal that this asymmetry of response provides the basis of a reliable method of identifying twins of two-egg origin.

LANDSHUTH, S. (1951). **[Paresis of the stomach in parturient cows.]**—*Refuah Vet.* **8**, 110-111. [English summary p. 128, slightly modified.] 291

L. described a number of cases of acute gastric paresis in cows just before or just after parturition. The clinical features of the condition included incoordination of movement, loss of appetite, body temperature of 39·5°–40·5°C., a weak and accelerated pulse and cessation of rumination and defaecation. In every case symptoms suggestive of septic metritis, milk fever, acetonaemia or poisoning were absent. P.M. examination of fatal cases revealed fatty degeneration of the liver and reddening of the abomasal mucosa. Treatment consisted of intravenous injections of 0·2 g. of pilocarpine or 3·0 g. coletyl [composition not stated] combined with massive doses of magnesium sul-

phate. Cases so treated recovered, whereas others, not diagnosed in time, succumbed.

JORDAN, W. J. (1952). **The puerperium of the cow: a study of uterine motility.**—*J. comp. Path.* **62,** 54-68. [Author's summary modified.] 292

Clinical observations were made during the puerperium of 107 attested cows and heifers. The motility of the involuting uterus was studied in 50 cases and the action of drugs on uterine contractions in a further 22. The normal patterns of uterine motility during the first 12 hours after expulsion of the foetus and during the later periods were described. In seven cases in which the puerperium was abnormal, uterine contractions were compared with the normal pattern. No significant changes in uterine contractions were observed during periods when the cow was allowed to lick the calf or during suckling.

The actions of pituitary extract, stilboestrol and other drugs on uterine motility during the normal and abnormal puerperium were described.

Evidence was advanced to support the view that retention of the foetal membranes is associated with reduced uterine motility within 24 hours after calving.

BARRON, D. H. (1951). **Some aspects of the transfer of oxygen across the syndesmochorial placenta of the sheep.**—*Yale J. Biol. Med.* **24,** 169-190. [Author's summary modified.] 293

To evaluate the role of the tissue layers of the syndesmochorial placenta of the sheep in the movement of oxygen from the maternal to the foetal blood, the oxygen pressure gradient between the maternal and the foetal blood was estimated at both ends of the parallel cords of placental capillaries by relating the percentage saturation of the samples drawn from the appropriate vessels—uterine artery, uterine vein, umbilical artery, umbilical vein—to the oxygen dissociation curve prepared from the same blood or one of similar characteristics. The range of variation in oxygen dissociation curves of normal ewes and of pregnant ewes was determined—the latter range overlaps the normal on the right margin to extend beyond it; the curves of foetal blood from foetuses younger than 116 days are to the left of the normal field. Curves of older foetuses tend to lie progressively farther to the right as gestation advances but are still short of the normal field at full term. The oxygen pressure gradient between the foetal and maternal blood tends to be greater at the arterial than at the venous ends of the parallel cords of placental capillaries over the last 60 days of gestation; and this difference tends to be greater in ewes with twins than in those with singlets. The pressure difference at the venous ends is of the order 38–45 mm. Hg. As the oxygen pressure in the umbilical artery is of the order of 16 to 20 mm., the unloading pressure of the uterine vein is the order 54 to 65 mm. Hg, a tension at which the maternal blood is still about 70% saturated. Estimations of the coefficient of oxygen utilization by the uterus are compatible with these findings and range from 8·3–41·5 in ewes with singlets to 22·6–65·5 in ewes with twins. The data presented are used to estimate the uterine flow necessary to provide for the needs of the foetus.

See also abst. **241** (effect of cortisone on pregnant ewes).

PERRY, J. S. (1951). **Reproduction of the African elephant,** *Loxodonta africana.*—*J. Endocrinol.* **7,** No. 4. pp. liii-lviii of Proceedings. 294

Autopsies were carried out on 81 female elephants killed by the Uganda Game Department. Most were adult, and nearly half of these were pregnant. Puberty appeared coincident with the eruption of the first permanent molars, probably about the age of 10. One elephant almost toothless from age was in milk. Probably the interval between pregnancies is roughly equal in length to the gestation period. Typically in pregnancy, both ovaries contain about six corpora lutea of "cow" size and 20–30 much smaller. Only some of the larger ones bear ovulation scars. Possibly one set of corpora lutea replaces another during the long pregnancy.

Some indication was provided that before pregnancy supervenes, the oestrous cycle is a short one.—F. L. M. DAWSON.

BULLOUGH, W. S. (1951). **Vertebrate sexual cycles.** pp. viii + 117. London: Methuen & Co. Ltd.; New York: John Wiley & Sons, Inc. 6s. 295

The cycles of reproduction in all the domestic animals and birds as well as in many wild species are dealt with in this little book. The subject is discussed under the headings:—Cycles of reproduction; Environment and reproduction; Hormones and reproduction; and Sexual behaviour. In addition there are a glossary of terms, a list of species mentioned, a list of references and an index. This very readable account provides an excellent summary of knowledge on the subject.—M.C.

ZOOTECHNY

YAKUSHEV, V. I. (1951). **[Physiology of respiration in calves raised under cold conditions.]** —*Veterinariya, Moscow.* **28,** No. 1. pp. 20-29. 296

An account of observations on 62 calves, born throughout one year, from birth to one year old in temperatures ranging from −15°C. in winter in unheated byres up to +23°C. in heated byres and in summer. Graphs and tables illustrate the figures obtained. Analyses of the data obtained revealed that the severer an irritant (in this case cold) in the first few months of life, the less is the reaction subsequently under similar conditions. Adaptation appears to be easily acquired in early life and calves subjected to cold from birth develop into hardy animals.—F.A.A.

STICKNEY, J. C., NORTHUP, D. W. & VAN LIERE, E. J. (1951). **Blood sugar and hemoglobin responses to anoxia in sheep and the effect of acclimatization.**—*Amer. J. Physiol.* **167,** 559-562. [Authors' summary modified.] 297

A report of studies of blood sugar and haemoglobin responses in eight sheep to acute exposures to hypoxia. A statistically significant elevation (10·8 mg. per 100 ml.) of blood sugar during 15 min. at 303 mm. Hg (24,000 ft.) was found. Thirty minute exposures at this simulated altitude or 15 min. to 254 mm. Hg (28,000 ft.) produced greater hyperglycaemia. Of four sheep subjected four hours daily to 303 mm. Hg. only two responded with the degree of acclimatization characterized by complete loss of the hyperglycaemic response at these simulated altitudes. Thus, sheep having low blood sugar and haemoglobin levels appear to react to hypoxia in regard to hyperglycaemia similarly to dogs having considerably higher levels of blood sugar and haemoglobin.

BASSETT, E. G. (1952). **Apparatus for continuous collection of urine from the grazing ewe.**—*N.Z. J. Sci. Tech.* Sect. A. **34,** 76-81. 298

A clear description, with illustrations, of an apparatus which can be used for long periods on ewes without ill effect.

—G. B. S. HEATH.

TECHNIQUE AND APPARATUS

GIANNI, A. (1952). Il significato istochimico della colorazione di Gram. **[Histochemical significance of Gram stain.]**—*Boll. Ist. sieroter. Milano.* **31,** 148-154. [Abst. from English summary.] 299

An account of the role of COOH-groups of dicarboxylic amino-acids in the Gram staining method based on tests *in vitro,* using crystalline amino-acids.

DOETSCH, R. N., ROBINSON, R. Q. & SHAW, J. C. (1952). **Techniques employed in cultural investigations of the bacteriology of bovine rumen contents.**—*J. anim. Sci.* **11,** 536-544. [Authors' summary copied *verbatim.*] 300

Data are presented which indicate that the total bacteria counts obtained on rumen samples vary slightly when held at room temperature for time intervals up to eight hours before processing.

Aeration of rumen samples by vigorous agitation over periods of time up to four hours results in little change in the total bacteria count.

Rumen fluid contains unknown substances essential for optimal growth of some rumen bacteria. These substances were not provided by a commercial medium devised for nutritionally fastidious bacteria. Modifications of techniques used in processing rumen samples are suggested in the light of the findings presented.

KOTCHER, E., ROBINSON, J. W. & MILLER, M. P. (1951). **The isolation of *Histoplasma capsulatum* from tissues of experimentally infected mice.**—*J. Bact.* **62,** 613-620. 301

The efficiency of two techniques for the demonstration of *H. capsulatum* in 42 experimentally infected mice was evaluated. Infection was demonstrable in 36 of the mice by staining tissue impressions with Leishman stain; it was demonstrable in all 42 mice by simultaneous culture on five different media.

—A. H. LINTON.

RAUBITSCHEK, F. (1951). **The use of blood agar for the primary isolation of dermatophytes.**—*Mycopath. & Mycol. Applic.* **6,** 15-18. [In English. Author's summary modified.] 302

The introduction of blood agar as additional medium for primary culturing of fungi from "tinea circinata" lesions proved successful in increasing the yield of positive results. Early distinctive features of *T. gypseum* and *T. rubrum* in hanging drop cultures were described.

HEALD, P. J., OXFORD, A. E. & SUGDEN, B. (1952). **A convenient method for preparing massive suspensions of virtually bacteria-free ciliate protozoa of the genera *Isotricha* and *Dasytricha* for manometric studies.** [Correspondence.] — *Nature, Lond.* **169,** 1055-1056. 303

After washing the glucose-fermented sample in buffer at 40°C., streptomycin was added to make a concentration of 0·8 m. mol. Incubation for 24 hours was followed by replacement of buffer and streptomycin for a further 24 hours. The activity of the protozoa remained unimpaired but bacteria in the suspension were killed. Using such virtually bacteria-free suspensions, the authors found that gas evolution occurred only with glucose and cellobiose and not with maltose or lactose.

—JAS. G. O'SULLIVAN.

DORMER, B. A., MARTINAGLIA, G. & BEEMER, A. M. (1951). **A new approach to the study of histology and pathology. The preparation of thin sections of whole organs.**—*S. Afr. J. clin. Sci.* **2,** 257-271. 304

Following formalin fixation the trimmed specimen is embedded in a coconut oil soap solution which solidifies on refrigerating. A horizontal hollow ground circular rotating blade is used to cut thin sections. After staining the sections can be mounted on paper or perspex and covered with a clear plastic paint.

—R. N. SMITH.

UOTILA, U. & KANNAS, O. (1952). **Quantitative histological method of determining the properties of the principal components of thyroid tissue.**—*Acta endocr., Copenhagen.* **11,** 49-60. [In English. Abst. from authors' summary.] 305

The authors described a simple quantitative histological method for the rapid determination of the percentage proportions of epithelium, colloid and stroma in the thyroid gland. The section is projected on paper, a straight line is drawn in an arbitrary direction, and the segments of the line covered by epithelium, colloid and stroma are measured. The total length of each, expressed as a percentage ratio of the whole length of the line, gives the relative amount of the component in question. The percentage proportion of epithelium gives a more accurate indication of thyroid activity than that of colloid or of stroma.

YESNER, R., HURWITZ, A., RICH, S. R., ROTH, W. & GORDON, M. E. (1951). **Preliminary observations on blood coagulation utilizing ultrasonics for continuous measurement of viscosity.**—*Yale J. Biol. Med.* **24,** 231-235. [Authors' summary modified.] 306

A technique for continuous measurement of viscosity of blood during coagulation using an electronic instrument comprising an ultrasonic probe and an electronic automatic computer was presented with an analysis of viscosity curves from 67 normal, healthy adult human beings. Two abnormal curves from "bleeders" were reproduced. Viscosimetric studies are now being carried out in relationship to phlebothrombosis, myocardial infarction, dicumarol therapy, carcinomatosis, pregnancy, in pre- and postoperative periods, and in patients with abnormal bleeding tendencies, as well as in further investigation of normal blood.

FLOSDORF, E. W. (1949) **Freeze-drying. [Drying by sublimation.]** pp. vii + 280. New York: Reinhold Publishing Corpn. $6.00. 307

The basic principles, applications and equipment required for freeze drying are described. There are special sections dealing with medical products; there is also an appendix on the embedding of tissues in acrylic plastic. The work is completed by subject and author indexes and a bibliography.—M.C.

HARRIS, R. J. C. [Edited by.] (1951). **Freezing and drying. Report of a symposium held in June, 1951.** pp. 205. London: The Institute of Biology. 15s. 308

This symposium deals with preservation of mammalian cells and tissues including spermatozoa and red blood cells, preservation of bacteria and viruses and the fixation of tissues by freezing and drying. Each of these subjects is dealt with by a number of papers contributed by specialists and the whole provides a very useful treatise on the application of the technique of freeze-drying to a variety of problems in biology and medicine.—M.C.

See also absts. **29** (a modified Dubos' medium); **45** (freeze-drying of *Br. abortus*); **47-49** (growth, identification and classification of *Brucella*); **116** (cultivation of distemper virus); **149** (worm-egg counts in faeces); **154** (staining of *Ascaris* ova); **253-254** (storage of human blood cells); **261** (electro-cardiography in dogs); **298** apparatus for continuous collection of urine from grazing ewes).

MISCELLANEOUS

KOROPOV, V. (1952). **[Veterinary museum.]**—*Veterinariya, Moscow.* **29,** No. 4. p. 61. 309

The Moscow veterinary academy is establishing an historical museum and requests gifts of MSS, books and any other relevant archives dating from the 17th to the 19th centuries.

—F.A.A.

REPORT

GOLD COAST COLONY. (1952). **Report on the Department of Animal Health for the year 1950-51.** [SIMPSON, S.] pp. 10. Accra: Govt. Printing Dept. 2s. **310**

The slightly improved staff position allowed for an expansion of work. A livestock census is nearly complete and shows a great increase in stock numbers. This is unfortunately mainly in the closely settled areas, and improved animal husbandry is not keeping pace with it. One of the steps being taken to remedy this situation is closer liaison with the Agricultural Department.

ANTHRAX is controlled by vaccination. The first case of JOHNE'S DISEASE in the territory is recorded. BOVINE CONTAGIOUS PLEURO-PNEUMONIA is controlled by slaughter and vaccination. TRYPANOSOMIASIS is treated by "antrycide"; there is a separate department for tsetse control. RINDERPEST is now controlled entirely by lapinized vaccine, a great improvement. The first outbreak of NEWCASTLE DISEASE occurred in the territory with heavy mortality. Disease, laboratory, trade and slaughter house statistics are given. The Department runs farms at Pong-Tamale and Nungwa. A few African employees are trained every year at Vom in Nigeria.—R. G. MARES.

BOOK REVIEWS

CLARE, N. T. [Ruakura Animal Research Station, Department of Agriculture, Hamilton, New Zealand.] (1952). **Photosensitization in diseases of domestic animals.** pp. 58. Farnham Royal, Nr. Slough: Commonwealth Agricultural Bureaux: Review Series No. 3 of the Commonwealth Bureau of Animal Health. 7s. 6d. **311**

This useful and well balanced little book should do much to dispel the ignorance and confusion surrounding the subject of photosensitization diseases in animals. The author has himself contributed notable work on the subject and he is at pains always to keep the practical aspects of the problem well to the fore. Perhaps his most difficult decision in planning the monograph was what could safely be left out, for to treat this subject exhaustively would require a large volume and digestion of a very scattered literature ranging over physics, chemistry, biochemistry, physiology, botany and meteorology.

After an introduction in which *photosensitivity* is defined as "that condition in which an animal has become hyper-reactive to sunlight" and *photosensitization* as "the syndrome which develops when an animal which is in a state of photosensitivity is exposed to sunlight", and an historical note, the author gives a brief summary of the physico-chemical facts and theories concerning photodynamic action. The popular misconception is exposed that photosensitizing activity is a consequence of the property of fluorescence; all that these phenomena have in common is that each is an indication that the molecule in question can be activated by absorption of radiant energy.

The physiological mechanism of photosensitization is still imperfectly understood, but there is good evidence for the release of a histamine-like substance and also that for such release to occur free oxygen is necessary. Finally the distinction between sunburn and photosensitization is made clear.

Passing to the more practical aspect of his subject, the author quotes Blum's three postulates which must be satisfied before the aetiology of a suspected photosensitivity disease can be considered as established. Photosensitivity diseases are then subdivided as follows:—Type I, Primary photosensitivity; Type II, Photosensitivity due to aberrant pigment synthesis; Type III, Hepatogenous photosensitivity.

Type 1 includes hypericism, fagopyrism and the keratitis which may follow dosing with phenothiazine. The only known example of Type II is congenital porphyria in cattle and pigs. The majority of photosensitivity diseases in animals are hepatogenous in origin (Type III). In these, the primary lesion is a failure or partial failure of the liver to excrete the pigments normally present in the bile. Among these, phylloerythrin is prominent in the herbivora, especially ruminants, being derived from ingested chlorophyll by the action of symbiotic micro-organisms. Phylloerythrin is a porphyrin with marked photosensitizing properties and causes severe injuries in affected animals. No less than 16 photosensitivities due to plants are described as definitely hepatogenous in character whilst many others, less thoroughly investigated, may also belong to this type. Approximately half the book is devoted to a description, one by one, of these hepatogenous sensitivities of which tribulosis and facial eczema have, of course, been most thoroughly studied. One striking feature of these diseases is the wide variety in the plants responsible for the initial

liver injury; they belong to unrelated families and the conclusion is inevitable either that the hepatotoxic agent is a substance widely distributed in the vegetable kingdom or, with more probability, that different chemicals are concerned, resembling each other only in their pharmacological action on the hepatic cells.

Some hints are given on the investigation of photosensitivity and in an appendix there is an indexed list of plants known to produce or suspected of producing photosensitivity.

The book is well and attractively produced at a moderate price. A useful addition might have been a summary of knowledge concerning the depth of penetration into the skin of light of various wave lengths and a chart of the mean distribution of energy in the sun's light. These are slight omissions, however, in a book devoted to the practical aspects of photosensitization diseases in domestic animals.

Author and publishers alike may be congratulated upon a useful addition to the Bureaux's 'Review Series'. It should be in the hands of every field worker confronted with a suspected or proven photosensitization disease. The great need is for further elucidation of the aetiology of these diseases and of the chemical nature of plant substances responsible for hepatogenous photosensitivity.

The dedication to the late Dr. J. I. Quin is a graceful and fitting tribute to an indefatigable investigator in the subject.—C. RIMINGTON.

BODDIE, G. F. (1952). **Introduction to veterinary therapeutics.** pp. xii + 196. Edinburgh & London: Oliver and Boyd Ltd. 15s. 312

This small book is divided into two parts, namely The elements of materia medica and The principles of therapeutics. In addition there are two appendixes (1) A synopsis of the law [British] relating to drugs, and (2) An alphabetical list of selected preparations and their doses.

The first part of 29 pages deals very briefly with the sources of drugs, their composition, assay, preparations, incompatibility and methods of administration; there is also a short chapter on prescription writing.

The second part of 128 pages has 11 chapters dealing with the various body systems such as the alimentary system, respiratory system, and so on, and nine chapters dealing with such subjects as vitamins, chemotherapy, antibiotics, anthelmintics etc.

In such a small book detail has had to be reduced to a minimum, and its chief value will be to give the student a general outline of the subject. At the end of each of the chapters dealing with the various body systems there is a short list of selected preparations and their doses.

The author has confined himself to the diseases which occur in Great Britain and gives no information on the treatment of exotic diseases such as trypanosomiasis.

The chapter on chemotherapy is very short —only six pages—which is inadequate to deal with the many advances which have been made in recent years. Developments have been so rapid that it is difficult for any textbook to be up to date, but one would like to have had some information on the newer drugs used for such diseases as blackhead in turkeys and coccidiosis in poultry.

Students will find this book useful in giving them the essential principles of the subject in a very concise form.—M.C.

ANON (1952). **Symposia of the Society for Experimental Biology. No. VI. Structural aspects of cell physiology.** pp. vii + 357. Cambridge: The University Press. 45s. 313

The papers presented at this symposium were:—Structural factors in cell permeability and in secretion, by J. F. Danielli; The properties of the nerve membrane and its relation to the conduction of impulses, by B. Ketz; The cell surface in relation to fertilization, by J. Runnström; The nucleus in fertilization, mitosis and cell division, by M. M. Swann; Cell membranes and cell division, by V. M. Mitchison; The action of general anaesthetics and the mechanism of the response to touch, by R. J. Goldacre; Contractile vacuoles, by J. A. Kitching; The cellular fate of injected antigens, by A. H. Coons; The role of the nucleus and the cytoplasm in synthesis and morphogenesis, by J. Brachet; Cytoplasmic structure and virus reproduction, by F. K. Sanders; Genetical analysis of cell organization, by G. Pontecorvo; The behaviour of nuclei and cytoplasm in amphibian interspecific crosses, by F. Battzer; Experimental work on amphibian oocyte nuclei, by H. G. Callan; and Inhibitors and mitotic physiology, by A. Hughes. Each paper has a useful list of references.

The whole forms a valuable source of information on recent work on several specialities, *e.g.* physiology, immunology, virology and pharmacology.—M.C.

RAGAN, C. [Edited by.] (1952). **Connective tissues. Transactions of the third Conference. February 14–15, 1952, New York, N.Y.** [Sponsored by the Josiah Macy, Jr. Foun-

dation.] pp. 166. New York, N.Y.: Josiah Macy, Jr. Foundation. $3.50. 314

The papers presented to this symposium were Connective tissue staining; The fine structure of connective tissues; The nature of reticulin; and Hypersensitivity and the hyperadrenal state. As is usual in this series of publications, a practically *verbatim* account of the dicussions on each of the papers is given. The paper and discussion on hypersensitivity is of especial veterinary interest for its possible bearing on the tuberculin reaction.—M.C.

RALLI, E. P. [Department of Medicine, College of Medicine, New York University, New York. Edited by.] (1952). **Adrenal Cortex. Transactions of the Third Conference November 15–16, 1951, New York, N.Y.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 204. New York: Josiah Macy, Jr. Foundation. $3.25. 315

The subjects which were discussed at this symposium were:—The effects of adrenal cortical hormones on renal function; The hypothalamus and regulation of A.C.T.H. secretion; The determination of adrenal cortical steroids in blood; and The biogenesis of adrenal cortical steroids. Following the usual practice at these symposia each subject was briefly introduced and then thrown open to discussion. The greater part of the book thus consists of an almost *verbatim* account of the discussions.

—M.C.

BRADLEY, S. E. [Department of Medicine, College of Physicians and Surgeons, Columbia University. Edited by.] (1952). **Renal function. Transactions of the third Conference October 18–19, 1951, New York, N.Y.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 210. New York: Josiah Macy, Jr. Foundation. $3.50. 316

The subject was dealt with under seven headings, namely, "The passage of substances across capillary walls"; "Possible mechanism of formation of glomerular fluid"; "Intrarenal pressure and renal blood flow"; "Physical factors in relation to electrolyte and water excretion"; "The use of the artificial kidney"; "Tubular secretion of potassium and acid"; and "Enzymatic processes in tubular secretory transport". Each topic was introduced by a specialist in a brief paper which was followed by informal discussions, these being reported very fully.—M.C.

SELYE, H. [Professor and Director of the Institut de Médecine et de Chirurgie expérimentales Université de Montréal.] (1952). **The story of the adaptation syndrome. (Told in the form of informal, illustrated lectures.)** pp. 225. Montreal: Acta, Inc. $4.50. 317

This book is made up of a series of seven informal lectures and unlike the author's other writings may be read as a whole since it is not continually interrupted by footnotes and references. There is a useful glossary of the numerous technical terms and abbreviations which have grown up around the adaptation syndrome. It should be very helpful to the many readers who would wish to have an overall picture of the auhor's work and theories but do not require to go into detail of the subject.—M.C.

SCORGIE, N. J. [Courtauld Professor of Veterinary Hygiene, Royal Veterinary College, University of London.] & WILLIS, G. A. [Lecturer in Veterinary Hygiene, Royal Veterinary College, University of London.] (1952). **Linton's veterinary hygiene.** pp. xii + 458. Edinburgh: W. Green & Son Ltd. 4th Edit. 60s. 318

This 4th edition of Linton's well known textbook has been very extensively revised and rewritten particularly those portions which deal with housing and ventilation. It consists of five sections, namely Water and water supply; Sanitation; Air, ventilation and light; The housing of animals; Control of diseases; and Transportation of livestock. The illustrations are numerous, well reproduced and easy to follow. The revision has been drastic in many places and the information is now brought up to date. Students, practitioners and others concerned with livestock production will find it a valuable source of information.—M.C.

SHOCK, N. W. [Edited by.] (1952). **Problems of aging. Transactions of the Fourteenth Conference September 7–8, 1951, St. Louis, Mo.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 138. New York: Josiah Macy, Jr. Foundation. $3.00. 319

The symposium was primarily concerned with the problem of aging in the human subject and much attention was therefore given to the sociological and economic aspects which are of little interest to veterinarians. One section which has some veterinary interest is that entitled "Biology and medicine" presented by J. E. Kirk; here the small-animal practitioner will find something of interest.

The problem is of course of little importance in so far as farm livestock are concerned.

—M.C.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

CHRISTENSEN, C. M. (1951). **The molds and man. An introduction to the fungi.** pp. viii + 244. Minneapolis: University of Minnesota Press; London: Geoffrey Cumberlege: Oxford University Press. 21s.

CLIFTON, C. E., RAFFEL, S. & BARKER, H. A. (Edited by). (1952). **Annual review of microbiology. Vol. 6.** pp. ix + 492. Stanford, California: Annual Reviews, Inc. $6.00.

DRYERRE, H. (1951). **Aids to physiology.** pp. vii + 327. London: Baillière, Tindall and Cox. 4th Edit. 7s. 6d.

FLOOR, W. E. & WEST, M. (1952). **An explaining and pronouncing dictionary of scientific and technical words. 10,000 scientific and technical words in 50 subjects explained as to a person who has little or no knowledge of the particular subject.** pp. viii + 397. London: New York: Toronto: Longmans, Green & Co. 12s. 6d.

GREEN, H. S. (Edited by). (1952). **Shock and circulatory homeostasis. Transactions of the first Conference, October 22–23, 1951, New York.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 245. New York: Josiah Macy, Jr. Foundation. $3.50.

LIPPMAN, R. W. (1952). **Urine and the urinary sediment. A practical manual and atlas.** pp. xii + 124. Springfield, Ill.; Charles C. Thomas; Oxford: Blackwell Scientific Publications. 55s.

MANDE, R. & HUËT, A. (1952). Vaccination par le B.C.G. Recherches de la Station-pilote B.C.G. du Centre International de l'Enfance. **[Vaccination by B.C.G.]** pp. 168. Paris: Centre International de l'Enfance. Travaux et Documents-III. Fr. 750.

MERRITT, H. H. (Edited by). (1952). **Nerve impulse. Transactions of the third Conference, March 3 and 4, 1952, New York.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 176. New York: Josiah Macy, Jr. Foundation. $3.50.

MØLLER-SØRENSEN, A. (1952). Laerebog i den almindelige veterinaerkirurgi. **[A textbook of general veterinary surgery.]** pp. 465. Copenhagen: A/S Carl Fr. Mortensen. Kr. 90.

MOMBERG-JØRGENSEN, H. C. (1952). Pelsdyrsygdomme. **[Diseases of fur-bearing animals.]** pp. 152. Copenhagen: A/S Carl Fr. Mortensen. Kr. 25.

NEUVEU-LEMAIRE, M. (1952). Précis de parasitologie vétérinaire. Maladies parasitaires des animaux domestiques. **[Veterinary parasitology.]** pp. xvi + 491. Paris: Vigot Frères. 3rd Edit. Fr. 3300.

NICOLAS, E. & BRION, A. (1952). Vade-mecum du vétérinaire. Formulaire vétérinaire de pharmacologie, de thérapeutique et d'hygiène. **[A veterinary vade-mecum. Pharmacology, therapeutics and hygiene.]** pp. xvi + 842. Paris: Vigot Frères. 9th Edit. Fr. 3000.

POMMIER, G. (1952). Les maladies du mouton et de la chèvre. **[Diseases of sheep and goats.]** pp. 79. Paris: Vigot Frères. 1st Edit. Fr. 480.

RIPPEL-BALDES, A. (1952). Grundriss der Mikrobiologie. **[An outline of microbiology.]** pp. vii + 404. Berlin. Springer-Verlag. 2nd Edit. DM 36.

SCOTT-WILSON, H. W. (1952). **Aids to bacteriology.** pp. viii + 390. London: Baillière, Tindall & Cox. 8th Edit. 7s. 6d.

SMITH, L. W. & WALKER, A. D. (1951). **Penicillin decade 1941–1951. Sensitizations and toxicities.** pp. 122. Washington, D.C.: Arundel Press Inc. $2.50.

ANON. (1952). **Useful drugs. A selected list of essential drugs with brief discussions of their actions, uses and dosage.** [Issued under the direction and supervision of the Council on Pharmacy and Chemistry of the American Medical Association.] pp. xi + 262. Philadelphia: London: Montreal: J. B. Lippincott Company. 15th Edit. 20s.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey, Surrey.

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